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Drug and Cosmetic Industry

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SPEAKING FROM ENGLAND

JOHN BERNARD WILKINSON, B.A., B.SC., F.R.I.C. *became Research Manager of the Toilet Preparations Development Unit of Unilever Ltd., in June, 1957. Before taking up his present appointment, he had been, successively, technical director of Joseph Watson and Sons Ltd., Leeds, and technical director of A.&F. Pears Ltd., Isleworth. He is a member of the Council of the Society of Cosmetic Chemists of Great Britain and was one of the two British delegates to the International Federation of Societies of Cosmetic Chemists.*

Glycerine IN SKIN CREAMS AND LOTIONS

In considering the formula for a toilet product, we must look at the product as a whole, including the package, against the envisaged uses of the product as a whole, not just at a single ingredient in isolation. To do otherwise can lead to trouble, both in the plant and in the home.

This becomes very obvious when consideration is given to a 'special ingredient', such as a germicide, added to a product of basically simple use pattern such as a soap, toothpaste or a shampoo. At one extreme, the main object of the operation is to provide a vehicle for the germicide or other special ingredient; in this case the product is built round the active principle and is designed to permit its application and working under optimum conditions. At the other end of the scale, the formula is modified as little as possible from the optimum for its main function so as to permit it to carry the 'plus' ingredient to the greatest advantage. Between these extremes lie clearly many compromises.

Both extremes point the moral that, although one may begin by considering the virtue and properties of one ingredient, the good formulator soon starts thinking in terms of the product as a whole in relation to its projected use. Therefore when we come to the question of glycerine in skin creams it is first necessary to consider the products in question and their uses. For the purpose of discussion, I have confined myself to the product types in Table I, taken generally from European practice, and covering in principle most products generally considered as skin creams or lotions.

Examination of this table, together with the 'characteristics' in Table 2, coupled with the general principles of cosmetic formulation, shows several common ideas behind the formulation of all these creams and lotions. Now consider the role of glycerine as a part of the formula for these product types in the light of the requirements for consumer use. Only when this has been done, is it possible to embark on the preparation of type formulae for the different product classes in a logical manner.

Product Properties

1. Drying-out. There is a general requirement for slow drying-out of the product in the jar. For the general purpose creams, the small sizes of which are often packed in slip-lid cans, this is made possible by use of a water-in-oil emulsion. Typical results below obtained in our laboratories show both the effect of glycerine in a water-in-oil cream and the vast difference in behaviour of two different oil-in-water creams.

Cream Type	Weight loss % in 1 week at 37°C.
General purpose cream (w/o) A (no glycerine)	6.2
" " " " A (+4% glycerine)	3.9
Compare with:	
Vanishing cream (o/w) B	34.8
" " " C	74.0

But, for all types of cream, storage before and during use demands minimisation of water loss. However perfect the closure design, we have to contend with casual deficiencies and incorrect reclosure by the user. Under the worst conditions, cavities can be produced in some types of cream, no-

TABLE I—THE PRINCIPAL TYPES OF SKIN CREAM AND LOTION

Product	Emulsion Type	Phase Proportions		Main Uses
		% oil phase	% water phase	
Foundation Cream	oil-in-water	15–30	70–85	As a foundation for face powders. May also provide colour by means of pigments or soluble dyes.
General Purpose Cream	water-in-oil	35–45	55–65	Foundation, cleansing and skin care; a compromise in efficiency between its various uses.
"Nourishing" Cream	water-in-oil	35–45	55–65	Includes creams containing special ingredients such as hormones.
Cleansing Cream	water-in-oil or oil-in-water	50–65	35–50	Removal of make-up and cleansing of face at night. Normally used in association with tissues.
Night Cream	water-in-oil	65–90	10–35	Overnight treatment, particularly as a corrective for dry skins. May also be used for massage.
Cleansing lotion/milk	oil-in-water	10–30	70–90	Removal of make-up during day. Applied on cotton wool.
Hand cream/lotion	oil-in-water	5–20	80–95	Treatment of dry hands or those damaged by work.
Skin lotion	—	—	100	Astringent or emollient; also a source of fragrance.

tably the traditional, aerated, vanishing cream and in some others a surface crust may form, which then restricts further water loss but is objectionable and unsightly.

A humectant can play a part in reducing these troubles, but do not exaggerate its possibilities. Typical water phases contain nowhere near the glycerine content required for them to be in equilibrium even with higher atmospheric humidities. Added glycerine can however restrict transfer of water vapour to the near-saturated atmosphere above a partially-closed jar and undoubtedly reduces the rate of loss of moisture. Henney, Evanson and Sperandio[1] have published comparative figures for several humectants and point out the influence of water content, humectant content and humidity. Evidence has been given by Rovesti and Ricciardi[2] that sorbitol is more effective in reducing rate of loss of water, but it must be remembered that this is only one of the properties required from a humectant.

In all creams some degree of control in use is necessary, despite the fact that the water content is ultimately required to disappear. In use, the water is either given up to the skin to restore lost moisture (see below), or, having done its job of giving fluidity and spreadability, it dries out onto the atmosphere; in neither case is it desirable for the water phase to disappear too quickly.

2. Skin humidification. The pleasure of a smooth, supple skin and the dislike of a dry-feeling hard skin have been appreciated by the non-experts from time immemorial. The credit goes to Blank[3] for stating clearly the connection between the feel of the skin and its water content. For finding simple practical ways of alleviating the less serious conditions, credit goes to the cosmetic industry, but, it must be admitted, largely by empirical methods. But to-day, with new knowledge, heavy emphasis is being placed by the beauty profession on 'moisturising' with a partial understanding of the old empiricism.

The presence of a humectant in the water-phase would be expected to stabilise the water content during the later stages of absorption or drying-out; and glycerine should fulfil this role well, although satisfying experimental proof is still lacking. The difficulties of work in this field have been well brought out by Powers & Fox[4] and we must surely support their conclusions that 'a great deal of additional study and work will be required'.

3. Lubrication. With all creams and lotions, good spreading is required not only initially but also sometimes during a prolonged working-in. Aqueous glycerine of all strengths provides a subjectively very acceptable medium and has the added advantage of good compatibility with other ingredients; in particular it can help to prevent 'balling' and 'rolling' when these properties are not desired[5] as suggested by Kalish. Furthermore, in lotions, glycerine can provide unctuousness without oiliness; this is of particular advantage in some more specialised products such as after-shave lotions and sunscreens.

4. Viscosity of Water Phase. The lubricant properties of glycerine solutions are allied to those of providing suitable increases of viscosity. For aqueous or aqueous-alcoholic lotions, the viscosity is often required to be controlled at a high enough level for ease in use. In emulsions, the viscosity of the continuous phase plays a part in providing a satisfying 'body' to the product, and especially in the thinner lotions and milks, glycerine can provide this adequately.[6]

5. Emulsion Stability. In emulsified products ingredients giving lubricant properties or increasing the viscosity of the water-phase must not prejudice emulsion stability. Glycerine certainly does not do so. Indeed we believe that in some complex emulsion systems, it may positively promote stability, especially where monoglyceride is used as one of the emulsifiers. In less complex emulsions, increase in stability through glycerine addition may be due solely to an increase of viscosity at the interface.

6. Perfume Stability. All ingredients in a cosmetic must be selected to have the minimum deleterious effect on perfume stability. Glycerine is certainly sufficiently non-reactive to meet this neutral requirement; indeed, probably by virtue of its solvent powers and low vapour pressure, it has some fixative action and is a valuable adjunct for this reason alone.

7. Safety and Mildness. Of necessity no ingredient can be employed which is not safe on the skin in the proportions used, both as in the formula and after drying-out or absorption (a point which is often overlooked). Glycerine meets this requirement.[7]

The hygroscopic nature of pure glycerine has been held to be a disadvantage on the grounds that it might draw water from the upper layers of the skin in order to reach its appropriate equilibrium. (See Powers & Fox[4] and Rovesti & Ricciardi[2]) This seems to me irrelevant since the equilibrium is always approached from the other side.

The relative humidities of the atmospheres in equilibrium with various strengths of glycerine/water solutions are given in a graph by Miner & Dalton,[8] from which the following round figures are taken:-

% glycerine	Relative Humidity
65	70%
80	50%
90	30%

Thus for instance, even in a 70% R.H. atmosphere in the immediate neighbourhood of the skin, the glycerine solution would need to be initially stronger than 65% before it became hygroscopic. Such concentrations are never used in practice,

TABLE 2—FORMULATION OF SKIN CREAMS AND LOTIONS

Product	Required Characteristics	Typical Ingredients		
		Oil Phase (%)	Water Phase (%)	Emulsifier
Foundation Cream	Must spread easily and give a smooth, non-oily film to hold powder: may be tinted or untinted.	(1) Traditional "vanishing cream" type Stearic acid 13–20	Glycerine 8–10	Potassium or triethanolamine stearate formed in situ.
		(2) Neutral Formulation Waxes or cetyl alcohol 5–10 Mineral oil 10–15	Glycerine 2–5	Polyethylene glycol/cetyl alcohol ether.
General Purpose Cream	Must spread easily and "moisturise". Has fairly fluid oil phase but must not be subjectively too "greasy". Must not dry out too easily if to be packed in slip lid can.	Mineral oil and petroleum jelly 25–30 Lanolin 2–3	Glycerine 5	Wool wax alcohols and/or cholesterol. Nonionic emulsifiers
Nourishing Cream	"Moisturising" quality required, especially if special ingredient is in water phase. Formula must be compatible with any special ingredients used.	A wide range of formula is possible, but generally avoiding extremes. Many of these products may have bases similar to the general purpose creams.		
Cleansing Cream	Must spread easily, be an efficient cleanser and remain oily on skin. Must not dry out in jar as large packs are often used.	Mineral oil 25–35 Lanolin 5–10 Waxes 3–10	Glycerine 5	Wool wax alcohols Nonionic emulsifiers

and until we have further knowledge of dynamics of water transfer process at the skin surface, there seems no reason for doubting the traditional safety of glycerine.

8. Antiseptic Properties & Preservation. Many toilet preparations to-day have antiseptic or even germicidal ingredients added to them—a matter on which comment must be left for another place and time—but the addition of preservatives is almost universal; the need for this has largely arisen from improvements in cosmetic formulation. Many of the older creams made with saponaceous emulsifiers needed relatively little preservation because they provided a mildly hostile environment for most microörganisms; unfortunately these creams were also mildly irritant to a few sensitive people. Products to-day tend to be "kind to skin—kind to bacteria", and we have thus new and sometimes severe problems of preservation on which much has already been written elsewhere. (Particularly see 'American Perfumer' Documentary on Preservatives and Anti-oxidants, January & February issues, 1959.[12])

It is thus a desirable feature of any ingredient chosen for other purposes that it shall also have some antiseptic or bacteriostatic properties.[13] Barr & Tice[9] have shown that most humectants have such properties but only at concentrations high enough for a presumed cosmetic action to be effective, such concentrations occur in toothpaste formulae, but not usually in skin cream water phases. However we do know that glycerine does not inactivate preservatives, which is more than can be said for many ingredients.[13]

Product Formulation. The principles of product formulation require us to select ingredients firstly for their positive qualities given the required properties and secondly for their neutral qualities of non-interference with the remainder of the system. It thus becomes clear that it is advantageous to include glycerine in substantially all skin creams and lotions at levels to be chosen according to requirements. Omission of glycerine or use of other humectants and/or thickeners can provide different properties which may in some particular instances be desirable, even at the expense of other desirable qualities, but these specialised cases cannot be dealt with in a generalised study such as this.

Every cosmetic chemist will have his own formulae for the products with which he is particularly concerned, but it may be helpful to give skeleton formulae for each of the product types given in Table I if only to indicate the levels of glycerine recommended. Most of these are to be found in various forms in published sources and all are well established in practice with their appropriate perfumes and colours; all formulae must always be read with the reservation that perfumes and colours, as well as details of manufacturing technique, can affect some of the properties, notably stability, appearance and texture. Many variations are possible on these skeletons particularly by use of various branded emulsifiers and emulsifier combinations, for information on which current literature should be consulted. The figures given in Table 2 are only quoted to indicate the different glycerine levels which have been found to be effective in practice and not to provide a complete cosmetic formulary.

SUMMARY. Consideration has been given to the user properties and requirements of the principal categories of skin creams and lotions. It has been shown that the properties of glycerine as an ingredient are such as to make its inclusion very desirable in products of this type. An indication is given of suitable proportions of glycerine in various types of product. A list of references is available upon request from the Glycerine Producers' Association.

TABLE 3—TYPICAL INGREDIENTS

Product	Characteristics	Oil Phase	Water Phase	Emulsifier
Night Cream	Firm consistency required if used as massage cream; should have "moisturising" properties.	Petroleum jelly and mineral oil 20–30 Waxes 10–15 Lanolin 5–10	Glycerine 2–5	Beeswax-Borax
Cleansing lotion/milk	Viscosity depends on intended method of use. Must remove make-up efficiently and should not leave the face too greasy.	Mineral oil 5–25 Waxes 1–5	Glycerine 3	T.E.A., stearate or oleate in situ.
Hand cream/lotion	To be "moisturising" and must spread well and not leave hands too greasy.	Lanolin 1–2 Cetyl Alcohol or waxes 2–5 Mineral oil 3–10	Glycerine 5–8	T.E.A. stearate
Skin lotion	Good control of spreading may be required in addition to specific properties such as emollience, astringency, etc.	—	Glycerine 5–25 Alum if required Gums to required viscosity	—

In all cases, water to 100 after inclusion of emulsifier, perfume and preservatives.

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MOISTURIZES. Glycerine attracts moisture and holds it in the product and on the skin. It promotes softness, flexibility, creaminess and long shelf life in countless formulations.

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COMPLETE INFORMATION

Our 18-page booklet, "Glycerine Properties • Reactions • Performance", offers full information to anyone interested in glycerine. We'd be glad to send you a copy. Address: Glycerine Producers' Association, 295 Madison Avenue, New York 17, N.Y.

NOTHING TAKES THE PLACE OF . . .

Glycerine

"Oh dear! I forgot to bring my birth certificate"

Keeping Posted

Cabinet Department for Consumers?

Senator Estes Kefauver says that he is now convinced that the consumer must have representation in the federal government through a federal department of Cabinet rank. Addressing a PTA meeting in his home state, the Senator said in part:

"Millions upon millions of Americans are now aware of the dangerous trend toward monopoly in key industries and the effect it has on the prices they pay for drugs, food, and hardware. I might point out that a 'tin' can is 99 per cent steel. The cost of a tin can sometimes is greater than the cost of the food it contains. And you are now aware, I am sure, that some two-cent pills are marked up to 18 cents or more by drug manufacturers. This works a hardship on the local merchant and the consumer. Nobody gains but a selected few.

"It is my intention . . . to continue to expose high prices and monopoly whenever and wherever they are found. If our federal antitrust or price-fixing laws have been violated, the Justice Department will be handed the information. If new laws are needed to further protect the consumer, they will be introduced.

"There have been other revelations of recent months. We have been sickened by the television quiz scandal. A furor has been raised over the use of dangerous chemicals in some foodstuffs. We have been reminded that gyp artists are draining millions of dollars from unsuspecting consumers through the sale of shoddy merchandise and cure-all concoctions which would put a witch doctor to shame.

"These recent developments emphasize the need for a Department of Consumers. This proposed department would represent the long-forgotten average American consumer and protect his interests as an official member of the President's cabinet. It was my privilege to introduce such a measure in the first session of this Congress. It is my hope it will be approved this year. Most certainly the need for such a department has become increasingly evident."

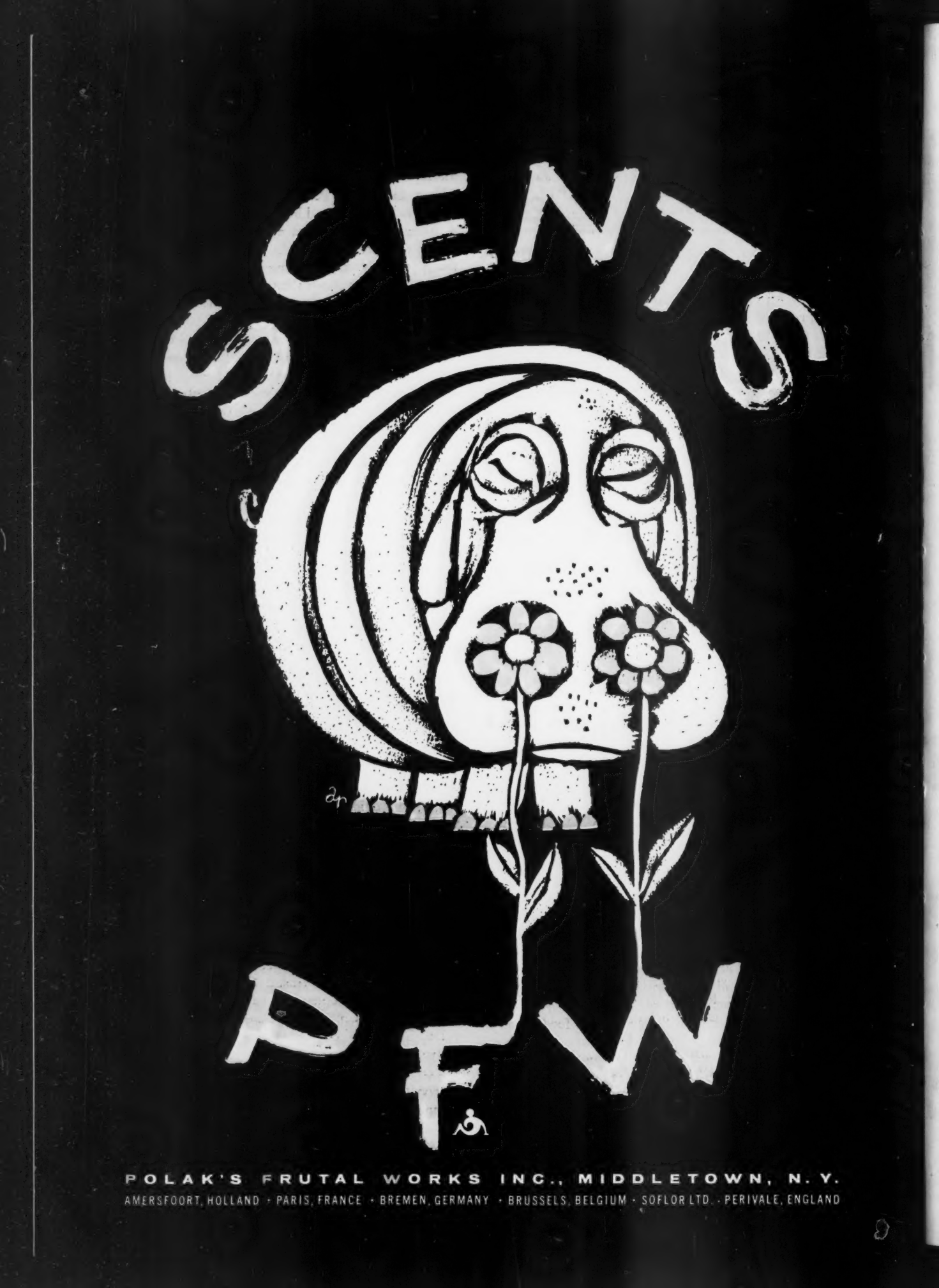
Nutrition and Medical Research

The importance of nutritional studies in all areas of medical research is reflected by the latest research grants of the National Vitamin Foundation. The 13 grants totaling $118,029 announced by Dr. Robert S. Goodhart, scientific director of the Foundation, include studies on the effects of nutritional deficiencies on mental derangements; nutrition in apparently healthy aging persons; possible biochemical defects as a basis for reactions to drugs; and the metabolism of polyunsaturated fats.

Wherever possible, it is explained, research grants made by the Foundation are designed to support new work to the point where the investigator can then obtain funds from other sources, such as various government agencies. In effect, the Foundation attempts to provide "seed" money to get important new research started. The list of grants includes:

Drs William B. Bean and Robert E. Hodges, Professor and Chairman, Department of Internal Medicine and Assistant Professor of Internal Medicine, respectively, State University of Iowa, Iowa City; $5,000 for six months for continuation of metabolic studies of pantothenic acid, factors regulating antibody production, and various metabolic problems. Human volunteers will be maintained on a pyridoxine deficient diet while receiving the antagonist deoxypyridoxine. Studies include excretion of xanthurenic acid, nitrogen balance and antibody response.

Dr. Bacon F. Chow, Associate Professor, Department of Biochemistry, The Johns Hopkins University, School of Hygiene and Public Health, Baltimore; $6,500 annually for three years for biochemical studies on the effect of single or multiple vitamin deficiencies on mental derangements. Deprivation of pyridoxine or vitamin B_{12} results in impairment of conditioned reflexes and the ability of rats to learn.



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Deficiency of pyridoxine impairs absorption of vitamin B_{12} so that a deficiency of the latter may occur despite adequate provision in the diet.

Dr. Carroll T. Clark, Assistant Professor, Department of Chemistry, University of Georgia, Athens, Ga.; $3,000 for one year for studies of the effects of ascorbic acid deficiency on chemically induced tumors in guinea pigs. Ascorbic acid can be used to hydroxylate aromatic compounds, and ascorbic acid deficiency in guinea pigs greatly increases the half life of many drugs which normally are eliminated via hydroxylation processes. First, carcinogenic compounds *in vitro* will be subjected to ascorbic acid hydroxylation to determine their susceptibility to this system, then guinea pigs which have been made scorbutic will be subjected to the indicated compounds and the development of tumors observed and compared to tumor growth in nonscorbutic guinea pigs treated with the same carcinogenic compounds.

Dr. Charles S. Davidson, Associate Professor of Medicine, Harvard Medical School, Boston; $4,700 for one year for studies of the nutrition of apparently healthy aging persons. An attempt to prove or disprove the hypotheses: (1) longevity and health in old age is influenced by previous and present food intake and eating habits; (2) food intake in older persons is related to social, economic and environmental, factors and to mental and emotional status; and (3) if (1) and (2) are true, then the environmental, mental, and emotional circumstances attending the reaching of old age may influence longevity and health in part by means of alterations in food intake.

Dr. Victor Herbert, Research Associate, Thorndike Memorial Laboratory, Boston City Hospital and Instructor in Medicine, Harvard School, Boston; $6,000 annually for 3 years for continuation of studies of mechanisms of vitamin B_{12} and folic acid uptake, utilization, and release by tissues. Studies will be continued into the mechanism of action of the intrinsic factor. Investigations will be conducted with patients with various neurologic disorders in an attempt to delineate the types of neurologic and psychiatric disorders most frequently related to nutritional deficiency of vitamin B_{12}.

Dr. M. K. Horwitt, Director, Biochemical Research Laboratory, Elgin State Hospital, Elgin, Ill., and Associate Professor of Biological Chemistry, University of Illinois, College of Medicine, Chicago; $9,000 for one year for continuation of studies of tocopherol and fatty acid relationships in man. A continuation of efforts to evaluate tocopherol requirements of man.

Dr. S. P. Mistry, Assistant Professor of Animal Nutrition, University of Illinois, College of Agriculture, Urbana, Ill.; $5,050 for one year for continuation of function and metabolism studies with C^{14}-biotin.

Dr. John F. Muller, Associate Professor of Medicine, University of Cincinnati, College of Medicine, Cincinnati; $7,942 for one year and $5,500 annually for two years for continuation of studies of the effect of vitamin B_6 deficiency on polyunsaturated fatty acid metabolism and serum transaminase values in humans.

Dr. Anthony V. Pisciotta, Associate Professor of Medicine, Marquette University School of Medicine and Director, Blood Research Laboratory, Milwaukee County General Hospital, Milwaukee; $6,000 for one year for studies of a possible biochemical defect in the leukocytes of persons susceptible to drug-induced agranulocytosis. Biochemical abnormalities responsible for agranulocytosis are unknown, and the condition cannot be produced in animals. Studies will be made of the effect of phenothiazines upon sulfur metabolism and enzyme systems of leucocytes from normal and susceptible persons, and upon the leucocyte-promoting properties of plasma from persons susceptible to agranulocytosis.

Dr. J. H. Quastel, Professor of Biochemistry, McGill University and Director, McGill-Montreal General Hospital Research Institute, Montreal; $5,050 annually for two years for studies of the influence of vitamins and vitamin analogues on carbohydrate-amino acid interrelations in animal tissues. Uniformly labeled radioactive glucose and fructose in the presence of brain cortex slices *in vitro* are converted into a series of amino acids which can be separated by chromatography and their relative quantities accurately estimated. . . . Addition of various neurotropic drugs to the brain tissue brings about marked changes in the mutual quantitative relations holding between the amino acids. Their interpretation throws light on the mechanims underlying carbohydrate-amino acid interrelations in the tissue and also on the mode of action of the drugs. A similar phenomonon obtains with isolated surviving intestine, where the patterns of amino acids, and their relative yields, differ markedly from those in the brain. This relatively new technique will be extended by investigating the effects of (1) additions of vitamins in quantities under normal, (2) absence, or deficiency, of vitamins by rendering animals vitamin-deficient by suitable diets, (3) the effects of vitamin analogues. Vitamins receiving special attention are pyridoxine, biotin, and vitamin K.

Dr. Murray Weiner, Assistant Professor of Clinical Medicine, New York University Research Service, Goldwater Memorial Hospital, New York; $5,000 for one year for continuation of studies of the relationship of nicotinic acid to fibrinolysin activation.

Dr. George Wolf, Associate Professor in Animal Nutrition, Radiocarbon Laboratory, University of Illinois, Urbana, Ill.; $6,752 for one year for continuation of studies of metabolism of radioactive vitamin A, and the function of vitamin A. Vitamin A is involved in synthesis of corticosteroids, and work will continue on determination of the precise step requiring the vitamin. It is not clear whether its

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action on steroid synthesis is direct on one or more steps of the sequence of reactions leading to corticosterone, or indirect through its action on TPNH formation in the adrenal cortex. An enzymatic approach is contemplated utilizing the adrenal glands of normal and deficient animals.

Dr. Theodore F. Zucker, Biochemist, Laboratory of Comparative Pathology, Stow, Mass.; $6,985 for one year for continuation of studies of conditioned pantothenate deficiency; test for slight deficiency.

Government Rejects Quinine Bids

General Services Administration shocked those interested in quinine last month by rejecting all bids made by private interests to purchase the government's stockpile of quinine sulfate and totaquine, claiming that the best price submitted—7 cents an ounce—was "inadequate." Three firms that were negotiating for the material offered by GSA were notified by wire that: "All proposals for purchase of stockpile quinine and totaquine are rejected. GSA has no present plans for proceeding with the sale of this material."

The stockpile of quinine, totaling 13,860,000 ounces, plus a small amount of totaquine, has been on the sale list for close to two years on the basis that it is now obsolete for treatment of malaria. When first offered, GSA planned to accept offers from foreign interests in the belief that there was no interest in this country in acquiring the drugs. However, it was found that an interest did exist here and the drugs were offered without restrictions as to purchasers.

Vick Buys Brazilian Drug Maker

Vick Chemical Company has acquired for cash the Brazilian pharmaceutical firm, Laboratorios Moura Brazil-Orlando Rangel, S.A. With some 50 ethical pharmaceutical products, the Moura Brasil firm of Rio de Janeiro has complete production, marketing, and distribution facilities covering the entire Brazilian market. These include six branches and a sales staff of about 140 men to promote and sell to physicians and drugstores. Dr. Nestor Moura Brasil, president of the firm, is continuing in that capacity. The primary objective of the purchase, according to Vick president Smith Richardson, Jr., is to facilitate and accelerate the expansion into Brazil of the company's ethical drugs. These will include the principal research specialties of Vick-owned ethical drug subsidiaries—The Wm. S. Merrell Company, Cincinnati; The National Drug Company, Philadelphia; and Walker Laboratories, Mount Vernon, N. Y.

Russian Alphabet in Merck Index

A Russian alphabet is one of several novel features to be included in the seventh edition of the Merck Index, which is due in March and will be 400 pages larger than its predecessor. The Index contains 1,600 pages convering nearly 10,000 descriptions of individual substances, more than 3,300 structural formulas, and about 30,000 names of chemicals and drugs alphabetically arranged and cross-indexed—10,000 more than the sixth edition published in 1952. An outstanding new feature is a separate cross-index for locating a substance by its systematical-chemical, generic, common, brand, or trade name. Other new features include tables of chromatographic adsorbents, calories in foods, biological units, saturated solutions, and prescription notations. A special section lists more than 400 organic "name" reactions with references, and a description and structural representation of each reaction. There is an up-to-date periodic table, a table of international atomic weights, and 300 pages on such subjects as thermometric equivalents, radioactive isotopes, refractive index of liquids, first-aid in poisoning, temperature conversion, and many others.

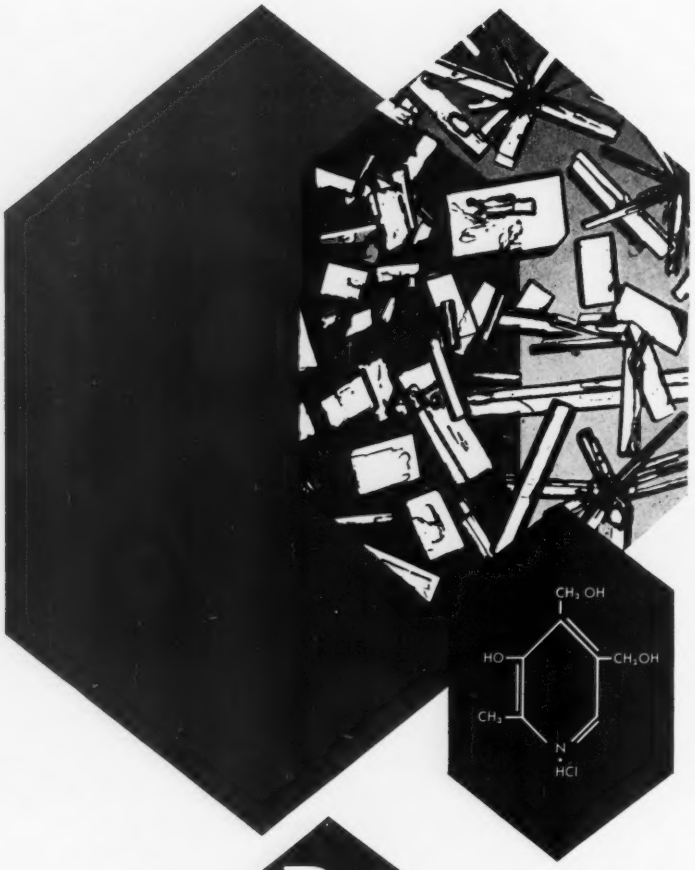
Minnesota Drug Sale Case Closed

A decision is anticipated early next month in the Minneapolis restrictive sales case which ended in December after a 14-week trial. The case involves an action brought by the State of Minnesota for the State Pharmacy Board against Red Owl Stores, Inc., Minneapolis supermarket chain, and Groves-Kelco, Inc., Minneapolis wholesale rack-jobber, the defendants being charged with the illegal sale of 18 products: Anacin, Alka Seltzer, Bromo-Seltzer, Bufferin, Lysol, Pinex, Vick's Cough Syrup, Murine, Ex-Lax, Feenamint, Sal Hepatica, Castoria, Va-tra-nol, Aspergum, Aspirin compound tablets, Bromo Quinine, 4-Way cold tablets, and Pepto Bismol.

Through expert witnesses the state sought to establish that the products are not "harmless, non-habit forming, proprietary drugs and medicines." Dr. Haddon Carryer, head of the allergy section, Department of Internal Medicine, Mayo Clinic, said aspirin is a frequent cause of severe allergic reactions and gastrointestinal bleeding, and that acetophenetin, an ingredient of an aspirin compound in the case, is frequently responsible for hemoglobinemia. Dr. Howard L. Herns, Minneapolis specialist in hematology and former dean of the University of Minnesota School of Medicine, said that among the deleterious effects of aspirin on the blood is the production of prothrombin, a substance associated with blood clots. He also said that acetanilid, one of the principal ingredients of Bromo Seltzer, may produce hemoglobins incapable of carrying oxygen.

Dr. J. A. Bargen, chairman, Department of Gastroenterology, Mayo Clinic, discussed a nine-year research on laxatives, saying that among 265 patients observed during that period, all of whom were long-time users of laxatives with histories of digestive difficulties, 27 had undergone a permanent change in the colon.

Dr. Richard Raile, chief of pediatric service, Minneapolis General Hospital, reported that there were



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VITAMIN DIVISION

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262 cases of accidental poisoning at the hospital between 1955 and 1956, with one case resulting in death. Dr. Harry Bell, Duluth, described his treatment of a two-and-a-half year old boy who was brought to him with severe abdominal spasms after ingesting Ex-Lax in an Red Owl Supermarket.

Dr. John F. Briggs, St. Paul, chairman of the section on diseases of the chest of the American Medical Association, said that a drop of oil from such products as Vicks Cough Syrup and Va-tro-nol, lodging in the lung can cause pneumonia and tumor of the lung. Regarding this testimony, we fail to see what difference it makes whether or not these products are bought in a drugstore or some other outlet. Certainly, no druggist is going to recite these remote dangers regarding the use of aspirin or the other products when a person buys an ordinary package of any one of them. The chances are that he doesn't know anything about any such remote dangers, other than that aspirin tablets as well as all medicines should be kept out of the reach of children.

Dr. Raymond L. Conklin, medical director of Miles Laboratories, said it would be impossible to ingest a sufficient amount of Alka Seltzer to cause poisoning because a massive over-dose of Alka Seltzer taken with water would automatically induce vomiting, thereby eliminating any harmful effects. P. K. Smith, doctor of pharmacology at Georgetown University, Washington, D. C., maintained that Anacin is harmless when taken in recommended doses.

The suit was a retrial of an original case brought by the board in 1955 before the same court, seeking an injunction against the sale of these 18 products by the defendants. On a technicality, the board's case was rejected on the basis that the agency lacks authority to seek injunctions in such circumstances, but, instead, should have filed criminal actions against the defendants. On appeal to the Supreme Court, the board won the right to prosecute its original case on the basis that injunction suits are the best method of protecting the public against the dangers of the sale of potent medicines by unlicensed retailers.

Drug Conference Ducks Restrictive Sales

The National Drug Trade Conference, at its annual meeting last month, declined to adopt a resolution which favors the restriction to drugstores of the sale of drugs transferred by the Food and Drug Administration from prescription sale to over-the-counter sale. When the Resolutions Committee failed to agree on recommendation of a resolution offered by the Conference Committee on Uniform State Laws, the matter was turned over to the Conference meeting for action. Hugo H. Schaefer, representing the American Association of Colleges of Pharmacy, asked for withdrawal of the report of the Committee on Uniform State Laws, which has the effect of killing the resolution. In executive sessions, the Conference voted not to reject the entire report, but to strike from it the proposed resolution and portions of the report explaining it. This was the only resolution before the Resolutions Committee. All action taken by the Conference must be by unanimous vote.

However, the Conference authorized the Committee on Uniform State Laws to continue to study the original problem of drafting a model state pharmacy law. Dr. Robert P. Fischelis, chairman of the committee, said that the stumbling block to completion of a uniform law is the controversy over restricting sales of drugs to registered pharmacists.

So it seems that the resolution of the controversial restrictive sales problem is at least a year—if not longer—away.

Dr. Fischelis was reelected president of the Conference, and James E. Allen of Henry B. Gilpen Co., and Ray Schlotterer of the Federal Wholesale Druggists Association, were reelected vice-president and secretary, respectively.

Miles to Make Citric Acid in Mexico

Miles Laboratories, having doubled their citric acid making capacity, production of which originally was almost all for captive use in the production of Alka Seltzer, is now a partner in a new company which will produce citric acid in Mexico. The new company, formed by a group of Mexican investors in partnership with Miles Laboratories, is called Quimica Mexama, S.A. Luis G. Aguilar, Mexico City businessman and financier, is president, while E. H. Beardsley, executive vice-president, and H. F. Roderick, vice-president, Miles Laboratories, are members of the board of directors. Immediate plans call for construction of a $1.5 million plant near Mexico City on a 10-acre site in the cane sugar district. The new company is expected to make Mexico self-sufficient in citric acid needs. Formerly citric acid supplies have been imported. The raw material factor is particularly important because the Miles process is said to be the only one that utilizes cane sugar, a surplus commodity in Mexico.

The plant will be an all-Mexican operation. Miles will train the Mexican technical staff in this country. Thus Mexico will take its place as one of the six countries producing citric acid by fermentation of sugar. The others are: the United States, England, Germany, Belgium, and Holland.

Pharmaceutical Writers Meeting

Integration of various phases of medical and pharmaceutical writing techniques will feature the Third Annual Medical Writers Institute to be held at Rensselaer Polytechnic Institute, Troy, N. Y., June 13 through 17. Directed by Professor Jay R. Gould of the Rensselaer faculty and coordinated by Dr. Joseph F. Montague, prominent New York surgeon and writer, the week-long meeting will include discussion-lectures by Dr. W. D. Snively, medical director, Mead Johnson & Company; Dr. Raymond C. Pogge,

director of medical research, The Wm. S. Merrell Company; Col. John B. Coates, director, Historical Unit, Medical Corps, USA; Dr. John H. Beckley, medical director, Warwick & Legler; Dr. Otto L. Bettmann, director Bettmann Archive; Dr. Eric W. Martin, editor Pfizer Spectrum; and Dr. Granville W. Larimore, Deputy Commissioner, New York State Department of Health.

Drugs of the Future

Stating that increases in research are almost automatic in the pharmaceutical industry because discoveries by one company always stimulate further research by its rivals, William B. Graham, president of Baxter Laboratories, and chairman of the board of the Pharmaceutical Manufacturers Association, told the Drug, Chemical & Allied Trades Association about the drugs of the future.

"One of the most richly rewarding areas of our pharmaceutical tomorrow will be enzyme research. It is virtually certain that some of the most exciting therapeutic breakthroughs will come from enzyme studies. Enzymes are marvelous biological catalysts which speed the myriads of chemical reactions within our bodies that sustain mental and physical vigor and, indeed, life itself. A number of enzymes are now remarkably useful in medicine for such purposes as debridement of wounds, proteolysis, digestant action, liquefaction of mucus, pronounced anti-inflammatory effects and fibrinolysis. As of today, there are scores of enzymes in pharmaceutical laboratories for which medical uses have scarcely begun to be explored.

"In the field of viruses, new multi-purpose vaccines which give 'one-shot' protection against many diseases appear to be on the horizon. Conceivably, a useful agent against the common cold may emerge. Laboratory tissue culture methods have made possible the breeding and identification of scores upon scores of 'new' viruses. Once a virus is identified, the preparation of a vaccine becomes feasible. Tissue culture offers other exciting prospects—the growing of individual cells in quantity, so that conceivably we may some day manufacture insulin and complex hormones by growing the producing cells in bottles.

"Some authorities believe that cancer is a virus disease. Whether that turns out to be true or not, viruses and cancer are linked even closer by studies of cellular nucleic acids—the 'mother molecules' of life. Here in the mysteries of the cell, laboratory workers come even closer to the hidden chemical secrets of life, and to understanding of mechanisms by which drugs as yet undiscovered may restore health.

"Better drugs for control or prevention of atherosclerosis, with its grim toll of mortality through coronary disease and strokes, should come from the elucidation of cholesterol mechanisms which still remain quite mysterious.

"A cure for arthritis, distinct from relief of arthritis which is now achieved by the remarkable steroid drugs, may come from better knowledge of complex chemicals which are characteristically found in the blood of arthritis patients.

"More and more, specialists are accepting the concept that mental disease is as much a biological disease as any other illness of the body. Breakthroughs, in the form of tranquillizers and anti-depressant drugs, have already been made, but there is a long way to go." The use of such drugs to get at the chemical secrets of the brain and nervous system is to come, Mr. Graham said.

Chemicals and Cancer

We sometimes wonder what future generations will think of us after the cancer problem is solved. For many long years cancer was considered to be strictly a chemical problem. Those who advanced any theory that the disease might be caused by microorganism or virus were considered to be strictly way off base. Now the virus theory is becoming respectable, and some of the best minds are considering it very seriously, at least as a working hypothesis.

But what will be thought of a lengthy report from the Department of Health, Education and Welfare, backed by the National Institute of Cancer, which contains the statement that an anticancer clause in a food, drug and cosmetic color bill is "sound public policy" because "no one knows how much of a substance will induce cancer when added to the diet of man," when the only proof of the substance's ability to cause cancer is its action on laboratory animals.

HEW Secretary Arthur S. Flemming presented this report before the House Committee on Interstate and Foreign Commerce. The committee chairman, Oren Harris, Democrat of Arkansas, said that government actions should not "scare" the public, but held that "no one can take a contrary view" to Mr. Flemming's position that substances that produce tumors in experimental animals should be banned from human diets.

Whether or not they should be banned no one knows, but, as a matter of fact, Mr. Flemming has no choice in the matter because the Delaney cancer amendment, which is part of the law, directs him to do so.

With regard to lipstick and other certified colors which caused injury (not necessarily cancer) to laboratory animals "when fed at the rate of 2 per cent of their diets, Mr. Flemming said that if the pending bill was passed he believed the Food and Drug Administration could establish safe amounts of colors that could be used in lipsticks if the agency were granted discretion on tolerances as the bill proposed. While the lipstick colors were to be banned after January 6, this was later extended to February 1. We often wonder, if these things are as dangerous to the public health as is claimed, how they can be continued on the market by these voluntary postponements granted by the enforcement agency which determined the danger and is acting to prevent it.

Kefauver ACT TWO

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The second session of the Senate Antitrust and Monopoly Committee, headed by Senator Estes Kefauver, opened on January 21, this time to investigate prices of tranquilizers. Whether Senator Kefauver fell under the quieting influence of the drugs that were under discussion, or whether he had been affected by the criticism of the first sessions on steroid drugs read into the Congressional Record by Senator Everett Dirkson, a member of the subcommittee who was prevented by illness from being present at the first sessions, could not be determined. However, Senator Kefauver was unable to work himself up to the melodramatic pitch he obtained at the sessions on steroids. And it cannot be said that he didn't try, because he did exhort at least one manufacturer to show "a little compassion" for those who must use his tranquilizers.

The criticism by Senator Dirkson of the steroid sessions pointed out the error of the fantastically high markups charged against the leading manufacturers. Senator Dirkson said in part:

"The best evidence of the fallacy of the 1,118 per cent markup by the drug manufacturers was Chairman Kefauver's own statement: 'Mr. Brown, what I can't understand is that small companies buy the same thing from Roussell (for 11 cents) and sell it for $2 to $3, you sell it for $8.'

"Senator Kefauver should realize that the 11 cents cost into the $2 price by small companies is 18.2 times, or 1,820 per cent markup, and the 11 cents cost into the $3 selling price by small companies is 27.3 times or 2,730 per cent markup. On this product Senator Kefauver has apparently approved the 2,730 per cent markup by the small company while he and his staff experts have condemned Schering Corporation, Merck & Co., and The Upjohn Company for a 1,118 per cent or more markup."

But getting back to the tranquilizers, Walter A. Munns, president of Smith, Kline & French Laboratories, was the first witness. The committee proceeded to "throw the book" at him. Senator Kefauver challenged Mr. Munns to justify his prices and profits or give the druggist and the consumer "a break." Senator Philip A. Hart, Democrat of Michigan, said he had information that patients released from mental institutions on tranquilizer use, had to return because they could not afford to buy the drugs on the outside. The common dosage for persons under treatment outside hospitals is eight tablets a day, the tablets retailing at about 10 cents each. Dr. John Blair, staff economist, presented charts showing that SK&F had reported a rate of return, after taxes, of more than 40 per cent of net worth. Dr. Blair had supplied the fourth quarter data by averaging the first three quarters. Net profits were shown as nearly 20 per cent of sales in 1959.

SK&F was said to make about 50 products of which only two are tranquilizers. The chart showed that the sharp rise in profits coincided with the introduction of Thorazine in 1954. Thorazine accounts for 30 per cent of the company's business. Dr. Blair said further that even before Thorazine was introduced, SK&F had been reporting unusual returns based on net worth, saying that, in 1949 and 1950, earnings were almost equal to its total net worth in 1949. Dr. Blair presented an analysis showing that if a person had invested $9,900 in the company's stock at the end of 1948, it would have been worth $244,013 at the end of 1959, and the stockholder would have received an additional $20,070 in dividends. To which Mr. Munns replied: 'Doesn't this typify a real growth company?"

Mr. Munns admitted the problem of people released from institutions not being able to afford the medication existed, but had no solution for it. He said that if the company wiped out its profit margin, the consumer would save only 3 cents a day.

The committee staff struck at the statement that research costs largely explained high prices. Thora-

zine, or chlorpromazine, was developed by Rhone-Poulenc of France, which company licensed SK&F as the exclusive United States distributor under its U. S. Patent. It was stated that the drug sold in Paris at one-sixth of the price charged here. Against a price in this country of $3.03 for fifty 25 mg. tablets, foreign prices were given as: Toronto, $3.75; Paris, 51 cents; Sydney, 94 cents; Dusseldorf, 97 cents; London, 77 cents.

Mr. Munns contended that although Rhone-Poulenc had done the original research, SK&F had to finance most testing to make the drug acceptable here, and also had to spend large amounts of money to educate the medical profession in this country to its use. Mr. Munns contended that the price at which SK&F sells Thorazine represents a "great bargain." "Without tranquilizers," he said, "mental hospitals would have had to care for an additional 50,000 patients at a cost of $75 million annually." He also pointed out that when Thorazine was first introduced here in 1954, the cost per patient in most mental hospitals for a daily average dose of 400 milligrams was $1, against a price today of about 15 cents.

The second witness was Henry H. Hoyt, president of Carter Products, Inc., discoverers of meprobamate, which is sold by Carter's Wallace Laboratories as Miltown, and by American Home Products' Wyeth Laboratories under license from Carter as Equanil. The committee charged that a Miltown tablet sells at 10.8 cents to the consumer against a cost of 0.7 cents. Mr. Hoyt pointed out that in addition to manufacturing costs, these items must be taken into account: selling expense and administration; advertising promotion and clinical samples; research and royalties; and income taxes. Of the 5.1 cents Carter receives from the wholesaler, it must pay out 3.9 cents, leaving a profit of 1.2 cents per tablet, said Mr. Hoyt. Mr. Hoyt said he felt the price was reasonable, and that there was no need for a reduction considering the high rate of obsolescence in the ethical drug field.

Dr. Blair, the committee economist, pointed out that Carter's net profit for all products in 1958 was 20.4 per cent of sales, compared with 13.1 per cent for 20 major drug firms. Mr. Hoyt contended that Carter had spent 13 profitless year in the ethical drug field and its profits in that phase of its business are "in constant jeopardy" from the research of other pharmaceutical houses. "It is scarcely reasonable," he said, "to criticize four years' profits resulting from 17 years of effort."

Mr. Hoyt called attention to a statement made at the earlier steroid hearings that Miltown sells in Argentina for 46 cents against $4.25 in this country.

He said his company does not sell in Argentina, and that the tablets were probably made from meprobamate powder bought in Italy. Since the Argentine government has devaluated its currency, he declared any such comparison was meaningless. "On the same basis of comparison," said Mr. Hoyt, "in the Argentine a loaf of bread would cost 2 cent and a pound of steak would cost 25 cents, which is certainly unrealistic."

Senator Kefauver admitted that the 46 cent price was an error, and that it had come from Senator Smathers of Florida.

The committee claimed that Carter, which buys its meprobamate from subcontractors, paid an average of $4.77 a pound in 1958, about 500 tons being produced that year. In reselling about 62 per cent of its bulk purchases, the company received an average price of $9.80 a pound in that year.

Dr. Frank M. Berger, developer of meprobamate and president of Carter's Wallace Laboratories, denied that the drug is habit-forming, that physicians prescribe it on the basis of hasty reading of medical advertisements, and that it should be dispensed under the direction of a psychiatrist. He said that Wallace issues an annual reference manual on meprobamate which lists and indexes a complete bibliography of articles on the drug, both favorable and unfavorable. When asked by Senator Kefauver why Wallace did not mention the drug's side effects in its medical advertising, Dr. Berger said that beer and whiskey advertisements contain no such warnings, though they can be habit-forming.

Alvin G. Brush, chairman of the board of American Home Products, which company's Wyeth Laboratories sells meprobamate under the trademark Equanil, stressed that tranquilizers "were developed by the ethical drug industry, on its own initiative, without financial support from governments, foundations, or similar groups." He was concerned that any tampering with the drug industry, which he described as "an amazing dynamic success for the good of all," might cripple or destroy its present and future achievements. Mr. Brush estimated that his company in research during the next five years will have to invest about $20 million more than in the last five years because of the threat that 75 per cent of its ethical drugs may become obsolete within that time. This, he said, points up the fact that risk and obsolescence are inherent factors in the drug manufacturing industry.

As to prices, Mr. Brush said that American Home Products' ethical drug prices have fallen about 47 per cent within the past 12 years, compared to a rise of 22 per cent in the general wholesale price index of the Bureau of Labor Statistics for the same period.

T. Davies, president of Ciba Pharmaceutical Products, Inc., said that his company, holder of the patent on reserpine, has licensed all manufacturers who applied, and that there are about 250 manufacturers now selling reserpine or other rauwolfia-type products.

Selling its reserpine under the trademark Serpasil, Mr. Haines said that drug trademarks are "necessary

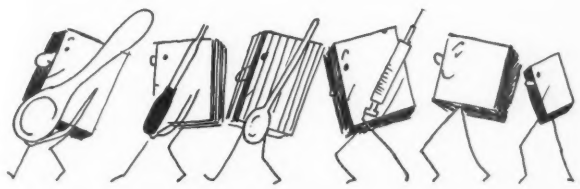
(*Continued on page 260*)

1959 PHARMACEUTICAL PRODUCTS PARADE

BY PAUL de HAEN

The marketing of new pharmaceutical products in 1959 shows a healthy trend. Sixty-three new chemical entities have been made available during this period, which is a larger number than in any one year of the past decade. The total number of products introduced has declined from 370 in 1958 to 315 in 1959. The latter is the lowest number of products introduced annually since 1950. What is responsible for this trend is difficult to say. I suspect that on the one hand, the realization of the high cost of product introduction has resulted in a more careful selection of new products and, on the other hand, past research activities in this country and abroad are showing results. Accelerated techniques in development have made it possible to improve on competitive products and to take quick advantage of basically new or breakthrough developments. Thirty-six firms who had marketed new products in 1958 did not put out any new preparations in 1959. On the other hand 16 manufacturers who had not supplied the physician with new preparations in 1958 did so in 1959.

Of the 63 new chemical entities, 20, that is, 31.7 per cent, came from Europe or were marketed by firms in the United States which are owned abroad. It is interesting to note that of the 43 new chemical entities developed in the United States, 27 were based on past knowledge, representing either derivatives of previously known structures or new salts of old products. It therefore appears that, although Americans are primarily interested in what the future holds and seem to place little emphasis on past developments, the majority of new products introduced during 1959 could not have been developed in the United States if past history had not led the way. This statement is not meant to imply that the development of derivatives or new salts of previously known compounds is less valuable from a therapeutic or commercial point of view. The observation primarily indicates, however, a direction of attitude and suggests a pressure toward being "productive" or following the "bandwagon." It is sometimes easier to improve than to originate or, perhaps, as Alexis de Tocqueville said over one hundred years ago, Americans are more addicted to practical than to theoretical science. But on the other hand such breakthroughs as the antibiotics, cortisones, and chlorothiazides have brought the American pharmaceutical industry revenue far exceeding its expectations.



PHARMACEUTICAL PRODUCTS INTRODUCED NATIONALLY 1950 — 1959

	Number of firms	Total new products	New single chemicals	Duplicate single products	Compounded products	New dosage forms
1950	100	326	28	100	198	118
1951	86	321	35	74	212	120
1952	89	314	35	77	202	170
1953	107	353	48	79	226	97
1954	101	380	38	87	255	108
1955	124	403	31	90	282	96
1956	126	401	42	79	280	66
1957	127	400	51	88	261	96
1958	126	370	44	73	253	109
1959	106	315	63	49	203	104
		3583	415	796	2372	1084
New Dosage Forms		1084				
		4667				

New single chemicals are new single chemical entities not previously known, and developed by one manufacturer.
Duplicate single products are those, such as dexamethasone or griseofulvin, which are put out by various manufacturers.
Compounded products are those having more than one active ingredient.
New dosage forms are products originally marketed, for example, in tablets and now offered in ampuls, suppositories, etc.

The following table offers a breakdown of new chemical entities introduced in 1959, the general classification, and place of origin.

CHEMICAL ENTITIES INTRODUCED IN 1959

	Developed in U. S.	Developed in Europe	Total
New original products	16	16	29
Derivatives of presently known structures	17	6	23
New salts of old products	10	1	11
	43	20	63
	68.3%	31.7%	100%

Two of the new original products developed in the United States came from sources outside the industry.

This table shows only those products synthesized by the industry which appear to be therapeutically valuable, and does not make reference to the many thousands of preparations that have been synthesized but did not prove useful. It would be helpful if the industry would publish collectively statistics on the many chemicals that are synthesized annually but

(Continued on page 280)

COURTESY HELENA RUBINSTEIN

GLYCERINE IN

In this age of specialization, I speak of the value of versatility. Man is by nature a highly adaptable animal, accommodating himself to most varied conditions and circumstances. Within the memory of the generation now passing, our remaining frontiers have challenged the manifold skill and resourcefulness of bold pioneers.

Possibly the modern trend toward specialization, combined with multitudinous devices for eliminating the need for almost all physical activity, have made versatility less valued than before. But we do continue to marvel at the many-faceted geniuses of the past. Leonardo da Vinci rose to supreme heights as painter and sculptor, but also outshone most of his contemporaries as inventor, engineer, architect, musician, anatomist, and diplomat. Benjamin Franklin excelled as diplomat, writer, and scientist. Thomas Jefferson's renown as statesman and political scientist was rounded out by unusual achievement in architecture, invention, and agronomy. Is it possible that many of the neuroses of modern living are connected with too much specialization?

What has all this to do with glycerine? Well, I consider glycerine to be the most versatile of all materials used in cosmetics and other toilet preparations. Certainly water is used in a greater number of preparations, but glycerine is used for more different reasons.

In attempting to enumerate the functions of glycerine, the following certainly must be included: humectant, plasticizer, spreading agent, lubricant, emollient, solvent, binder or adhesive, oil and solvent barrier, foam stabilizer, viscosity increaser, sweetner.

Needless to say, there is no cosmetic product in which all these functions can be utilized at one and the same time. There are, however, many cases in which several of the designated properties are desired in a single formulation and are simultaneously furnished by glycerine.

It may be worth while to consider glycerine as a purveyor of each of the properties mentioned. Some examples of its effects will illustrate its raison d'etre in each category.

Glycerine as a Humectant

In many cosmetic preparations, especially in those physical anomalies lightly disposed of by simply calling them creams, water loss is a consideration of prime importance. Most of the packages for cosmetic creams have closures which are reasonably tight to water vapor. However, if a jar of cream is closed loosely, and allowed to stand thus for many days, a considerable water loss can occur. Such incomplete closing is not uncommon, after the cream has been put in use. If the cream contains suitable amounts of an effective humectant, it will survive exposure to a dry atmosphere with less hardening and shrinkage.

The effectiveness of glycerine as a humectant is related to its ability to tie up water as a hydrate, and thus to hold some water in a preparation even in atmospheres of rather low humidity. Most other humectants suitable for use in cosmetics also depend on hydroxyl groups for their hygroscopic properties. When rated on the basis of power to hold water against an atmosphere of 50 per cent relative humidity, some other humectants have the following percentages of glycerine's effectiveness: propylene glycol 90, sorbitol 65, polyglycol-400 55, dipropylene glycol 55. It will therefore be seen that none of these materials equals glycerine in ability to hold moisture, in the absence of other ingredients.

In cosmetic creams, however, the situation is complicated by the presence of other ingredients with varying degrees of attraction for the humectant and for water. Various attempts have been made to determine the relative efficacy of humectants by determining rates of water loss from creams differing only in the humectani present. One recent study of this type used creams containing 20 per cent stearic acid,

*Presented at the Fatty Acid Symposium of the Glycerine Producers' Association, January 1960.

1 per cent of a Tween-Arlacel emulsifier, 0 to 25 per cent humectant, and the balance water; possibly an oversimplified vanishing cream. Results indicated that glycerine was the best of the humectants under relatively high atmospheric humidities, but that under lower humidities some of the other humectants performed better, notably sorbitol. With all the liquid humectants, water loss to air of very low humidity was greater from creams containing low percentages of the humectant than from creams containing no humectant.

These results, paradoxical as they may appear at first glance, may find their explanation in the formation of a hard, thin crust, poorly permeable to water vapor, when the cream without humectants is exposed to very dry air. The liquid humectants apparently alter such a crust to make it more permeable, while sorbitol does not. In creams containing more ingredients, the conditions would be altered, and each formulation must be tested individually to determine what type and what proportion of humectant will produce the best combination of stability, appearance, and texture.

Naturally, no humectant can maintain a steady moisture content against widely varying atmospheric humidity. A preparation containing glycerine at a level low in proportion to the content of dry solids may be rather hard and dry in very dry atmospheres, while in very humid atmospheres it may be very soft and may even attract beads of moisture to the surface. But over relative humidities within a reasonably wide range, adequate glycerine content keeps a well-formulated cream usable and elegant.

Other types of cosmetic products, such as those in paste or cake form, also are kept in usable condition by the inclusion of glycerine. In products with lower solid content, such as lotions, high water content and smaller closures make glycerine less necessary for maintaining consistency in the package; however, glycerine may improve the effect produced after the lotion has dried on the skin, by maintaining a satisfactory liquid-solid ratio after equilibrium with the atmosphere has been reached. This effect is also tied up with the plasticizing effect of glycerine.

Glycerine as a Plasticizer

A cosmetic product or its evaporation residue may of course be kept plastic partly by virtue of the water held there by the glycerine. However, even in the total absence of water, glycerine exerts a strong plasticizing effect on many solids. In many cases it is a better plasticizer than water, probably because of a greater tendency to wet the surface of solid particles without penetrating too far. This property makes possible the effective coating of solid particles by relatively small amounts of glycerine, with resultant formation of a plastic mass.

Many liquids, ranging in polarity from glycols to mineral oils, can be used as plasticizing agents. For some preparations, it may be possible to select from this large group a liquid more efficient than glycerine for the particular plasticizing job at hand.

Glycerine as a Spreading Agent

Spreadability may be just another way of looking at plasticity; certainly both words imply the ability to move or flow under pressure. At any rate, glycerine is often used to produce or enhance in a mixture its spreadability on a soft surface in a thin, even layer.

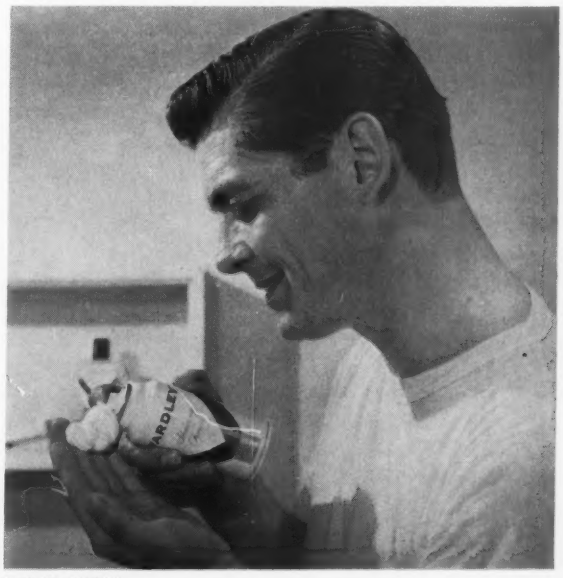
Glycerine as a Lubricant

Lubricating action overlaps plasticity and spreadability on the one hand, and emolliency on the other. There may be few cosmetic applications where the lubricating power of glycerine can be looked at separately from one of these other effects, but glycerine does have very definite value as a lubricant, being superior to oils for special purposes. This effect may operate in the functioning of certain cosmetic prod-

(*Continued on page 285*)

COSMETIC FORMULATION*

BY PAUL G. I. LAUFFER, Ph. D., NORTHAM WARREN CORPORATION



COURTESY YARDLEY

SMITH KLINE & FRENCH'S PUBLIC RELATIONS

BY TED KLEIN PAUL KLEMTNER & CO.

Making History

In 1947 a young man with ideas at Smith Kline & French was given the job of organizing the company's public relations program. His first major contribution eventually proved to be a giant step forward in medical communications, not only for his firm but for the entire field of postgraduate medical education.

The man—G. Frederick Roll. The idea, shared by several SK&F executives, but encouraged by Roll—a closed-circuit TV program originating in a medical school and beamed to viewing physicians in another part of the school. In 1948 it was tested at the University of Pennsylvania.

Dr. I. S. Ravdin of Pennsylvania suggested that medical TV needed color in order to perform a real service to viewing physicians. But in 1948 there was no special color TV camera designed to be of use in televising surgical procedures.

SK&F then went to CBS, and invested $65,000 to develop a TV color camera for medical progress. The result was that on a June morning in 1949 the first medical color TV program was produced by SK&F for physicians attending the AMA convention in Atlantic City. They were amazed to see color TV on twenty 12″ receivers in a viewing room at the medical meeting.

From that historic occasion, which was not only

WILLIAM L. GRALA, JR.

G. FREDERICK ROLL

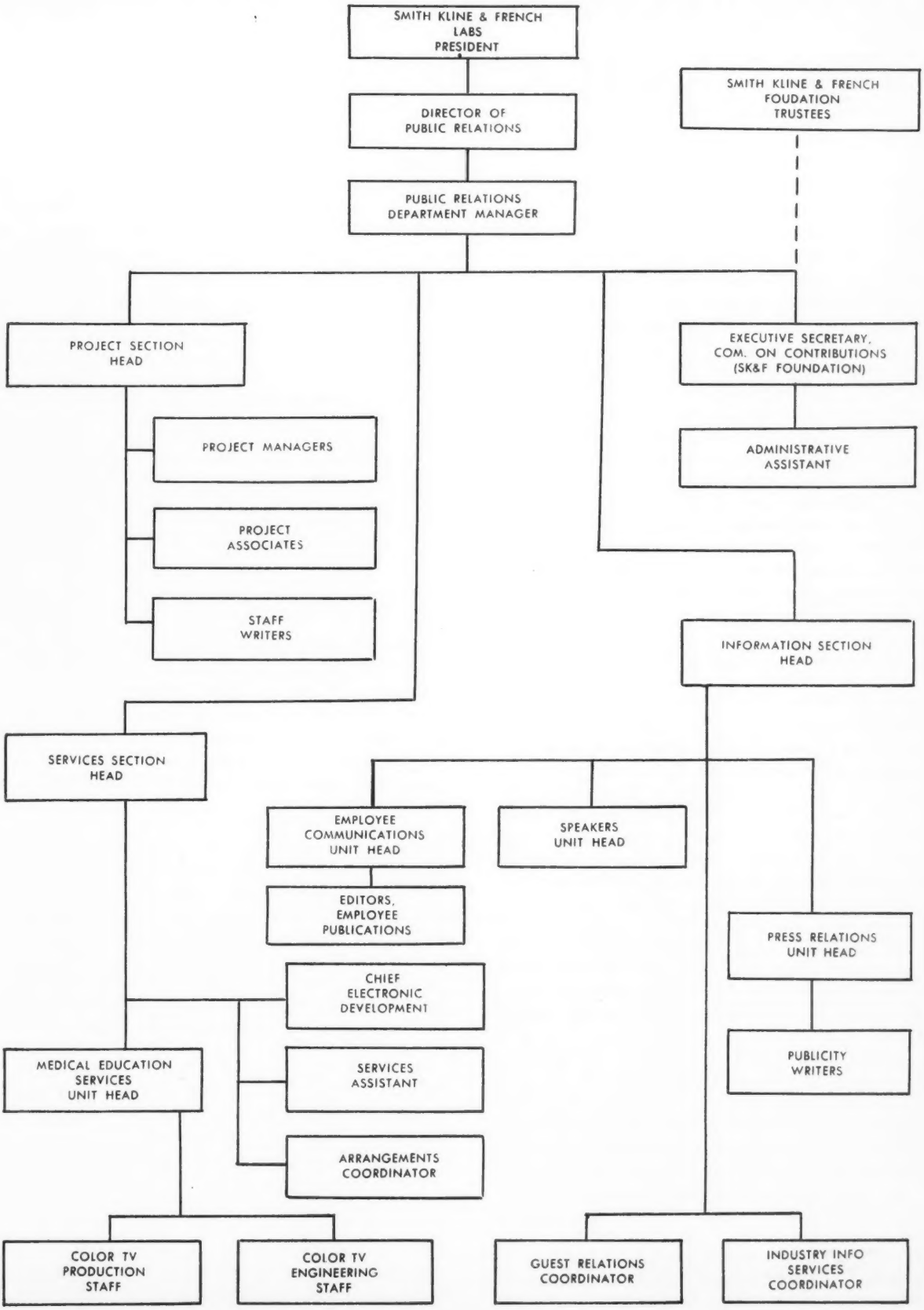
the first medical color TV show, but the world's first nonexperimental color TV program, SK&F has expanded their color TV service to a truly formidable operation. Now the color pictures are projected on a giant screen 9′ x 12′, so as many as 2000 physicians can see operations in full color closeup.

This public relations project now employs a staff of 13 TV experts, owns equipment transported by a 13-ton mobile studio, and travels over 25,000 miles a year providing color TV medical programs to physicans across the nation. Recently, a second complete studio on wheels was purchased and is now in operation in England. To date, SK&F has spent about 2½ million dollars on their closed-circuit TV projects. In the more then 2700 TV shows produced to date, there has been not one SK&F commercial. SK&F provides the equipment and talent as a service to medical education.

This marks the tenth year that SK&F has been doing their adjunctive public relations closed-circuit programing. In that time, they have televised over 850 surgical procedures at 140 medical conventions. In addition, they have bagged over 1500 clinical presentations in color. It is estimated that some 600,000 physicians have seen one or more of the latter.

A new idea is the linkage of five medical colleges

(*Continued on page 275*)


SMITH KLINE & FRENCH LABS PRESIDENT
DIRECTOR OF PUBLIC RELATIONS
PUBLIC RELATIONS DEPARTMENT MANAGER
SMITH KLINE & FRENCH FOUDATION TRUSTEES
PROJECT SECTION HEAD
PROJECT MANAGERS
PROJECT ASSOCIATES
STAFF WRITERS
EXECUTIVE SECRETARY, COM. ON CONTRIBUTIONS (SK&F FOUNDATION)
ADMINISTRATIVE ASSISTANT
INFORMATION SECTION HEAD
SERVICES SECTION HEAD
EMPLOYEE COMMUNICATIONS UNIT HEAD
SPEAKERS UNIT HEAD
EDITORS, EMPLOYEE PUBLICATIONS
PRESS RELATIONS UNIT HEAD
CHIEF ELECTRONIC DEVELOPMENT
PUBLICITY WRITERS
MEDICAL EDUCATION SERVICES UNIT HEAD
SERVICES ASSISTANT
ARRANGEMENTS COORDINATOR
COLOR TV PRODUCTION STAFF
COLOR TV ENGINEERING STAFF
GUEST RELATIONS COORDINATOR
INDUSTRY INFO SERVICES COORDINATOR

MEASURING AND DEODORIZING BREATH ODOR*

BY DONALD A. M. MACKAY, Ph.D.,† DAVID A. LANG, Ph.D.,‡ AND MURRAY BERDICK, Ph.D.†

Most of our work has been done with 25° C. and 100° C column temperatures and with −80° C. and 25° C. pre-column temperatures. Using these temperatures, column conditions (percentage and type of substrate, column support, and flow rate) can be so chosen that a particular type of analysis can be carried out within 20 minutes and preferably within 15 minutes. A certain amount of prejudgment must be used here in anticipation of the chemical nature and boiling range of the looked-for trace materials.

It might be interjected at this point that if only one component is of interest, the direct sampling technique can be considered for its pertinence to a given problem in trace analysis by application of the following rationale: The longer a substance is retained on the column, the greater will be the diffusion that occurs and, hence, the larger the air volume containing the sample that can be applied without unduly contributing further to the spread of the sample on the column at the time just prior to emergence.

Thus, if Compound X emerges after 10 minutes from a 100° C. column at a 50 cc/minute flow rate, its retention volume will be 500 cc, but diffusion processes may cause Compound X to take a minute (50 cc carrier gas) from start to finish of elution even when applied as a liquid to the top of the column. Two rules-of-thumb from our experience may now be applied. The direct air sample may be as large as 2 per cent of the retention volume (hence 10 cc), or for poorly eluted peaks, the volume of direct sample may be 50 per cent of the elution volume (hence 25 cc). In either case, but particularly the latter, resolution of earlier appearing peaks will be badly affected. The carrier gas should be stopped and the pressure allowed to drop to atmospheric before adding such large air volume, else further dilution of volatiles will occur.

It is to be noted that application of this procedure does not guarantee that Compound X will appear as a peak on the chromatogram. It merely tries to establish the best chance that Compound X will be detected by the direct sampling method, if the direct sampling method is applicable in this case.

In many cases, it can be determined (as by reference to Dalla Valle's tables[5]) that the odor threshold

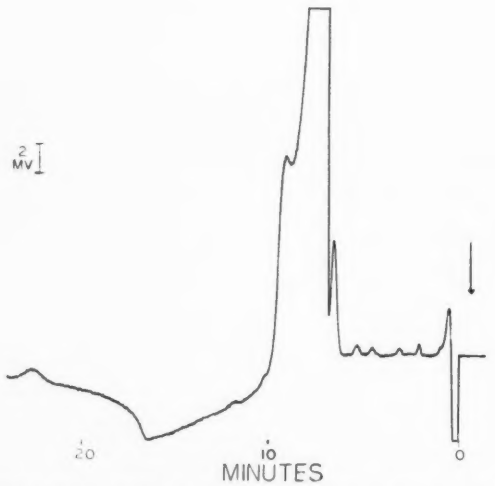


Figure 4. Human breath. Sixty cc/minute argon; 2000 volts; four-foot column, 10 per cent DDP on firebrick; 22° C.

of an odorous substance represents a molar concentration far too low to allow detection following gas chromatography of directly taken air samples. Or conversely, it can be calculated that the volume of air containing a sufficient number of molecules to activate the detector is far larger than can be accommodated by the rules-of-thumb suggested previously for direct air sampling.

There is, of course, no need for the gas chromatographic column, other than as a means of delaying the organic materials long enough to enable them to enter the ionization detector in the argon atmosphere necessary for detection, and, as has been pointed out, the longer they are delayed the less likely the chances of detection. On the other hand, the delay time (retention time) is a valuable physical constant that can help to identify an unknown component, and the longer the delay time, the more useful it becomes for characterization of the unknown.

A balance must be struck, therefore, between the rapid elution needed for detection and the slower elution needed for separation of mixtures and characterization of each individual component.

However, by use of another equally highly sensitive detector, the flame ionization detector, some resolution of this problem is possible for, with this detector, the odorous air sample can be mixed with hydrogen and fed directly to the flame, and the ions formed by combustion collected and measured. The conventional use of the flame ionization detector has

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†Evans Research and Development Corp., New York, N. Y.
‡American Chicle Co., Long Island City, N. Y.

been as a chromatographic detector in which hydrogen carrier gas is used to elute components from the column and burn them in an air atmosphere, but this detector can also be adapted for continuous analysis, as well as for the batch-type analysis inherent in gas chromatography.

In continuous analysis by the flame ionization detector, the total organic content of an odorous air sample is measured (water, carbon dioxide, carbon monoxide, etc. do not interfere), but no information regarding the complexity or nature of constituents is obtained. The "sensitivity," however, is highest because no, or little, dilution has occurred. Once

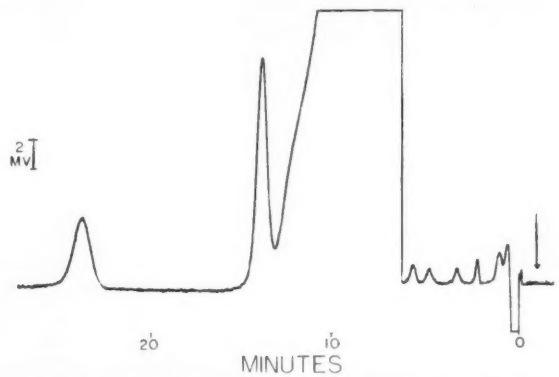


Figure 5. Human breath some days later. Conditions as in Figure 4.

again, a balance must be struck, depending on the needs of the problem. Highest sensitivity must be balanced against the dangers of interference from non-odorous materials.

In our own laboratories, we have circumvented this problem by using the flame ionization detector to monitor the content of "pure" or simple odorants such as propyl and methyl mercaptans, and the argon detector for odorants of unknown composition. Naturally, the flame ionization detector could be used with the column, too, but the argon detector seems more capable of withstanding the abuse resulting from the sample handling techniques described here.

The flame ionization detector used here, based simply on an oxy-hydrogen hand burner and a Leeds and Northrup micro-electrode assembly and *p*H meter, was designed to burn air at a 50 cc/minute flow rate, in contrast to commercial flame ionization detectors which are designed for flow rates of about 1 cc/minute, the usual values for capillary columns. Further communications from this laboratory will describe its use in the determination of the capacity of chlorophyllin, copper gluconate, and other deodorants for methyl and propyl mercaptans.

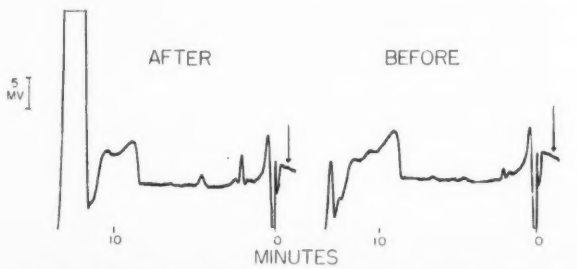


Figure 6. Effect of drinking beer. Sixty cc/minute argon; 1750 volts; four-foot column, 10 per cent DDP on firebrick; 25° C.

Experimental

The subject was asked to blow through the enrichment column, a small U-tube filled with one inch of aged column packing and cooled in dry ice, until 400 cc of air had been collected by water displacement. The enrichment column was then disconnected from the line and its contents emptied into the top of the separation column at room temperature. After waiting one or two minutes, the carrier gas was restarted and the ionization current read out on a potentiometric recorder (as in Figure 1).

The four-foot column contained carefully aged 10 per cent DDP on 80-100-mesh crushed firebrick. The argon gas flow was in the region of 50 cc/minute. The detector contained 80 micro-curies of radium as the ionizing source and was operated at a voltage of 1750 or 2000 volts. Usually, one-fifth attenuation or less was chosen to keep base-line noise within tolerable limits, although still definitely present and observable.

Using these conditions, the recorder tracing in Figure 4 was obtained from a young man known to be a heavy smoker. Figure 5 shows a trace from the same subject, obtained some days later.

In both cases, six small peaks are seen following the initial negative peak due to air, followed by components in considerably larger amounts. One of these larger constituents is perhaps acetone, but since, at this early stage of the work, acetone had been used in the dry-ice cooling bath for the pre-column, its presence here must be discounted although it appears impossible that acetone could enter the U-tube. When making analyses at these fantastically low levels, precautions normally considered completely adequate may have little relevance. It is far better to avoid solvents altogether and work in an atmosphere as free as possible of common laboratory contaminants.

The broad negative peak seen in Figure 4 at about 15 minutes, is caused by the presence of a large amount of water. The broad positive peak in Figure 5 is most likely a composite of several peaks. Figure 4 shows three peaks in this area, but in Figure 5, the amounts involved are so much larger that resolution has been lost. The prominent peak in Figure 5 at 14 minutes is probably ethanol. Apart from these differences, the personal pattern of this subject showed remarkably good consistency.

In a controlled experiment to measure the effect of beer on breath, a male subject drank one glass slowly and five minutes later blew 400 cc of breath through the enrichment column. Figure 6 compares

(*Continued on page 250*)

COURTESY STENDAHL

MASCARA

BY STEPHEN A. KARAS, D.Sc. CONSULTING CHEMIST

Disraeli, in his memoirs, told how a grand diplomatic ball had been ruined for the lady he escorted. Her mascara ran! Evening occasions before and since have been spoiled by this essential and tricky item of makeup. Mascara adds glamor, and smudges take it away. Cosmetic chemists are approaching a solution to the problem; mascara improves with continuing changes. Mascara smears reflect a product that is soluble in water; on the other hand, the water-insoluble preparation cannot easily be removed from the eyelashes when it is desirable to do so. Furthermore, insoluble mascaras may dry into hard brittle flakes that fall into the eyes, and odors of solvents used in this type of formula may be a substantial disadvantage. Nevertheless, preference is growing for mascaras that will not smudge.

What is the size of the market? We can assume that in 1959 the rate of growth was about 20 per cent, as in the previous year, which would put the retail sales at about $7.5 million.

The oldest form of mascara was a powder, which is virtually never used now. Earliest cake mascaras consisted of soap with sugar or other ingredients as fillers, along with the color. They were followed by wax cakes emulsified with a triethanolmine soap, to overcome the eye irritation caused by the alkaline soaps. The newest forms of mascara are cream products, available in a variety of formulations. The pigment may be suspended in a diluted wax-oil emulsion or in a gum or resin solution for the water-soluble product, or the waxy base may be dissolved in a volatile solvent to leave a water-resistant film. General considerations in formulating these preparations will be discussed later, but the final properties are vital.

First, there must be some means of teaching users the proper technique in applying mascara. The art seems to lie in stroking the lashes with the brush or the applicator from the eye outward, upward for upper lids, downward when lower lids are being treated, for even and uniform application. A poor product will splash excess liquid or leave visible solid particles. A consumer problem lies in whether the lashes are long or short. Short eyelashes are difficult to coat properly in the first place and, since mascara does not lengthen the lashes, results are not outstanding. Artificial eyelashes are about as satisfactory a solution as any. Properly applied mascara can create the illusion of larger eyes by making the eyelashes more visible. The lashes, when mascara has been

applied, should not be sticky, or glued together, nor should they be stiff and spiked.

Mascara should dry on the lashes in less than ten minutes, as a rule. Too rapid drying will tend to promote flaking; too slow drying may result in stained clothing during dressing. Drying may be tested by spreading the mascara on glass or plastic plates and measuring drying time under various humidity conditions. The point of dryness is readily determined by rubbing the surface with a finger. Water-soluble mascaras usually dry more rapidly.

The specific gravity of the mascara, and the total weight applied to the lashes are important. Too heavy a deposit and too much weight on the lashes will give the lids an unpleasant feeling of heaviness. Thickness of the film and its specific gravity thus become factors to be considered in formulation.

Whether water-soluble or water-resistant, the mascara should have a relatively narrow viscosity range, to some extent determined by the orifice of the tube. The tube product should then preferably have viscosity in the range of 23,000 to 26,000 cps., while the rod dispenser product should be slightly thinner, in the range of 18,000 to 21,000 cps. Viscosity, as well as some other characteristics, will determine adhesion to the brush or applicator. The rod applicator and the brush should both be wetted effectively by the mascara so that uniform application to the lashes is facilitated. The viscosity, of course, must remain reasonably constant throughout the shelf life of the preparation.

Because of the proximity to the eyes, odors of perfumes, as well as of the solvents used in nonaqueous mascara may be annoying, and vapors may cause irritation. Tolerance is often developed but, even so, the causes of irritation by vapors should be avoided as much as possible. Irritation and eye redness result from alkaline products when they get into the eyes. In fact, any type of chemical reactivity, such as acidity, oxidative, or reductive action, should be avoided. Too heavy a deposit on the lashes may also be a source of irritation. Whenever reddening of the eyes or other irritation is encountered during testing, the formula of the preparation must be carefully checked with a view to revision. Even solvents that are otherwise innocuous may result in excessive removal of skin oils about the eyes, with consequent skin dryness.

Water-resistance, the ability to resist the smudging effects of tears, is a highly desirable quality, which in some instances is pushed too far. A truly waterproof mascara will also be quite difficult to remove at the end of the day. The product can be readily tested by applying it to a sheet of paper by means of a cloth or brush and allowing sufficient time for drying. The degree of water resistance is then gauged by wetting the area slightly and checking how easily smudging occurs. Ease of removal should be checked on the basis of the combined action of the water or cream used for cleansing, along with a minor degree of friction. Mascara that can be readily removed by mild rubbing with a cream or with water, as against the still more hydrophobic product requiring a solvent or vigorous rubbing, may still show completely satisfactory resistance to tears and water. Irritation and redness of eyelids may, in fact, be caused by a quite harmless product requiring too much rubbing for removal.

Finally, the behavior of the mascara in its container must be carefully investigated. Certainly, there should be no separation of components, but there must also be assurance that slight alkalinity, for instance, does not result in attack of aluminum tubes; other interactions must also be considered, since some of the pigments may not be inert, as they are generally thought to be.

Early cake mascaras were mixtures of soap, black pigment, and fillers, and were quite good within their limitations. They were not water-resistant and quickly

(*Continued on page 246*)

COURTESY AZIZA

COURTESY ESTEE LAUDER

TRANSFORMULATION TO FILMCOATING

BY HERBERT M. GROSS, Ph.D., AND CLARENCE J. ENDICOTT, M.S.
PHARMACEUTICAL RESEARCH, ABBOTT LABORATORIES

Tablet coating has existed as an art for many decades. Some scientific articles suggesting the need for an innovation in processing have appeared. Only in the last several years has the concept of filmcoating been reduced to practice with broad-scale application across the product lines of a major pharmaceutical manufacturer.

Coatings are desirable and necessary product adjuncts, to eliminate and envelop unpleasant medicinal odors and tastes, as well as to guard the active agent against adverse environmental conditions. In addition, coatings facilitate product differentiation and attractiveness and offer inherent recognition.[1-3] These advantages apply to coatings in general. Existing literature indicates the numerous shortcomings of sugar coatings for pharmaceutical tablets.

Problems with Sugar Coatings

In 1954 Chavkin[4] pointed to the need for tablet coating technology in the pharmaceutical industry and the apparent lack of industrial interest in improving this unit process. It is interesting to note that industry recognized the need for coating technology. Industrial research had been involved with filmcoating studies for some time. Late in 1953 the first filmcoated product had been marketed. Obviously considerable experimental research and product development had transpired.

Chavkin[4] pointed to the large number of separate sugar and sub-coats required to produce a suitably coated tablet. The crystalline properties of sugar cause it to wear and it is not likely to build or round the sharp edges of tablets. Sub-coats are required to accomplish this effect. Because of this nonplastic characteristic, crystalline powders form in coating pans from abrasion of the tablets. These powders cause problems in developing smooth, uniformly colored finish coats.[5] The process is tedious and time-consuming, it requires great skill,[6, 7] and is expensive.

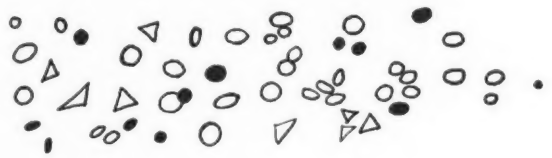
Mattocks[8] listed objections to the sugar-coating process, pointing to the need for a scientific approach. Accurate reproducibility of coating size, color, and disintegration are impossible, due to an inability to conduct experimental tests comparing coating powders and syrups. According to Mattocks, "Most of the other difficulties of pan coating may be summed up under the heading of *cost*." Materials handling, prolonged time, and floor space consumption result in costs unreasonably high for such a simple operation.

The necessity in sugar coatings to build an evenly rounded form causes enlarged tablets. These ingredients contribute to tablet weight and volume and obviously are reflected in packaging and shipping costs. Further, brittleness of the sugar coat poses problems in handling, counting, and filling tablets into bottles, and continues in their susceptibility to chip and fracture during their transportation to wholesalers, druggists, and the ultimate consumer. Clarkson[1] stated that finished sugar-coated tablets have a volume approximately 50 per cent greater and a weight twice that of the uncoated tablet. Translating the weight factor into millions of bottles of tablets produced on an annual basis even for one pharmaceutical company should cause concern over unnecessary shipping charges. This factor coupled with the difference in weight of glass bottles necessitated by larger tablets make the extra shipping weights and costs mount significantly. Further, consider not only the additional costs of packaging any number of tablets in a bottle of 50 per cent greater size, but also the additional space involved in warehousing sugar-enlarged tablets in larger containers.

A strange contradiction exists in the formulation of pharmaceutical products encased in sugar coatings. It is recognized that hydrolysis is causative and catalytic in the degradation of many medicinal agents (vitamins, antibiotics, etc.). It is common practice in sugar coating to apply a seal-coat of some water-impervious materials such as shellac. After drying, this seal-coat is expected to prevent water in the sugar-coating solutions from penetrating into the tablet core and destroying the medicinal. If a good seal-coat is applied, water-resistance is achieved. However, this water-impervious tablet is expected to dissolve in the gastrointestinal tract—to disinte-

grate and liberate the medicine with uniformity of response. Conversely, if the seal-coat is poor, gastrointestinal fluids are successful in penetration, the tablet disintegrates well and the medicine is available for therapy. But, only some or none of the active medicine remains, since hydrolytic decomposition may have been put into effect by the manufacturer. Obviously, in practice this situation is not as clearly defined, but the paradox exists.

Tablet-disintegrating agents amplify this problem. Inclusion of disintegrants is prohibited with moisture-



permeable seal-coats, for subsequent sugar coatings will cause slight or significant swelling of the core. Cracked tablet coatings result. The elimination of disintegrators overcomes this problem of swelling and coating rupture but does not provide the most desirable tablet disintegration or drug availability.

The presence of water with its high boiling point in sugar and massing solutions and the inherent prolonged drying time both contribute to migration of dyes in sugar color coats.[8]

Previous Publications

All these problems associated with sugar coating tablets serves as a background for the interest in the following publications.

Doerr, Serles and Deardorff[9] described alcoholic solutions of hydroxyethyl cellulose and sodium carboxymethylcellulose applied over a prime shellac coat as alternatives to sugar coating. Gans and Chavkin[4] reported their investigation involving the application of 50 per cent polyethylene glycol 6000 solution in ethanol. The procedure required preheating of the tablets to between 50 and 55° C. for 3 hours to obtain a smooth non-chipping coating. Golod and Huyck[10] evolved a filmcoating also containing polyethylene glycol 6000 and carboxymethylcellulose applied over a shellac glaze from an aqueous-isopropanol solution. Winters and Deardorff[11-13] reported a film formulation containing zein and polyoxyethylene sorbitan monolaurate in isopropanol. Ashan and Blaug[14] described their experimentation with polyvinylpyrrolidone and acetylated monoglycerides as replacement for sugar coating.

These authors describe the advantages of filmcoating in the following terms.

(1) Considerable reduction in application time[4, 9-11, 13]
(2) Less material cost[4, 9, 11]
(3) Less labor cost[4, 9, 11]
(4) Lower transportation costs[9]
(5) Provides protective coating[9]
(6) Allows monogramming identification at no additional cost[9, 11]
(7) Uses conventional coating equipment[4, 9, 14]
(8) Pharmaceutically elegant coating without addition of size or alteration of shape[9]
(9) Easy to swallow due to smaller size and smoothness[9, 11, 14]
(10) Allows variety of colors[4, 9]
(11) Durable and resistant to chipping and cracking[9, 10]
(12) Stable to light, air, heat, water[4, 11]
(13) Water permeable and permeable to gastrointestinal juices[4]
(14) Nonaqueous[4]
(15) No undercoat or protective pre-coating required[4, 11, 13]
(16) Nontoxic[4]
(17) Nonreactive to preclude incompatibilities[4]
(18) Odorless and tasteless[4]
(19) Simple procedure to learn and reproduce[4]
(20) No dusting[10, 11]
(21) No separate wax or polishing coat necessary[10, 11]
(22) No adverse effect on disintegration time[11, 14]
(23) Less equipment required in amount and variety[11]
(24) Substantial reduction in tablet and bottle size as well as shipping and storage space[11, 14]

These attributes not only describe many of the desirable characteristics of filmcoating as compared with sugar coating, but also serve as an outline for the properties of an ideal film.

Film Constituents

To possess the above qualities, a filmcoating formulation must include:

(1) A *film former* capable of producing smooth, thin films reproducible under conventional coating conditions and applicable to a variety of tablet shapes.

(2) An *alloying substance* providing water solubility or permeability of the film to insure therapeutic utilization of the drug.

(3) A *plasticizer* to produce flexibility and elasticity of the coating and thus provide durability.

(4) A *surfactant* to enhance spreadability of the film during application.

(5) *Opaquants* and *colorants* for individualization of product by color.

(6) *Sweeteners, flavors, aromas* to enhance acceptability to the patient.

(7) A *volatile solvent* menstruum to allow rapid evaporation for speedy operation but to keep it slow enough for uniform film application over the tablet core. It should also be essentially anhydrous.

(8) A *glossant* to provide luster without a separate polishing operation. The actual filmcoating in-

(*Continued on page 264*)

GLYCERINE and the Biology of the Skin*

BY FRED H. SNYDER, Ph.D. RESEARCH DIVISION, THE PROCTER AND GAMBLE COMPANY

The long use of glycerine in cosmetic products is ample, but empirical, evidence of its value; that glycerine has a beneficial effect on the skin can scarcely be questioned. However, the nature of this benefit, from the biological standpoint, has begun to receive careful attention only in recent years. The reason for this is simple: our understanding of the chemistry and physiology of the skin is just reaching the point where quantitative investigations can be carried out on the influence of a variety of materials on skin condition. Unfortunately, the literature does not yet abound with reports of studies dealing with the action of glycerine on the skin. At this time, one can only describe some of the methods that are now available, make a few references to work dealing specifically with glycerine, and indicate some directions that may provide useful information in the future.

Until about eight years ago, the fatty layer on the skin surface was rather generally believed to be of major importance in maintaining the outer layers of the skin in their normal soft, supple, smooth condition. At that time Blank (1952) performed an exceedingly simple but very revealing experiment; he demonstrated that a piece of dry, brittle callus could not be softened by even months of exposure to petrolatum, lanolin, or triglycerides, but that it became soft and pliable after taking up as little as 10 per cent moisture from an atmosphere of 60 per cent relative humidity. A little earlier Jacobi (1949) had studied the ability of keratin to take up and hold moisture under a variety of conditions, and had stressed the importance of moisture content to skin condition.

These observations have led to a number of important studies on the water economy of the skin surface, and it is these investigations, with some of their implications as to the use of glycerine in cosmetics, that will be discussed here. (There is no intent to minimize other factors, such as the obvious effects of cosmetic products as lubricants or emollients for the skin surface; it is simply an arbitrary restriction of the material to an interesting and rapidly developing phase of the subject.)

The material to be reviewed can be conveniently presented under two major headings: (1) factors influencing water loss from the skin, and (2) factors influencing the moisture-holding capacity of the cornified epithelium.

*Presented at the Fatty Acid Symposium of the Glycerine Producers' Association, January 1960.

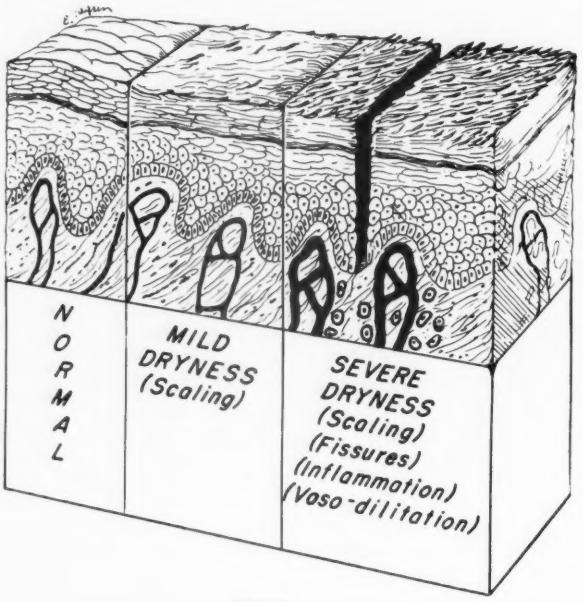


FIGURE 1

The important features of the structure of the skin are shown schematically in Figure 1, reproduced from a paper by Blank (1955). The dermis, or corium, is shown at the bottom of the sections, with a simplified blood supply indicated. The epidermis, which depends on the underlying dermis for its nutrients (including water), grows upward from the continuous row of basal cells. These cells flatten somewhat, pass through a "transitional layer," and end up as dead, keratinized or cornified flakes, finally reaching the skin surface and, under normal conditions, being desquamated as microscopic particles.

The keratinized cells of the normal epidermis are rather closely packed, giving a smooth unbroken surface. In mild dryness or chapping, flakes become partially loosened (perhaps because of decreased flexibility) and the surface becomes slightly roughened. If this condition becomes intensified, actual cracks or fissures may develop, and a response may occur even in the dermis, with dilated capillaries and the appearance of an inflammatory infiltrate.

Water Loss from the Skin

Studies on Excised Skin. Using a modification of a method described by Burch and Winsor (1946), Blank (1952, 1953) has measured the rates of diffusion of water vapor through excised human skin.

The procedure involves fastening the specimen tightly to a small weighed cell in which water is in contact with the lower (dermal) surface of the skin. Moisture loss through the skin can then be measured simply by weighing the cell at appropriate intervals.

Under the standardized conditions used, water diffuses through whole abdominal skin at a rate of 0.1-0.2 mg./cm.^{2}/hr. When the entire epidermis is removed by the method of Blank and Miller (1950), the corresponding rate for the remaining dermis is 10-15 mg./cm.^{2}/hr., indicating that the major barrier to water loss is associated with the epidermis.

The possible importance of the surface lipid film with respect to these observations was of considerable interest. On several grounds, Blank was able to conclude that the relative impermeability of the epidermis to water is not primarily related to a fatty layer. First, the stratum corneum contains about 20 per cent water as compared to the 70-80 per cent in the underlying tissues; this suggests that a barrier exists someplace in between. Second, the stratum corneum easily takes up water when the hands are immersed; there is apparently no barrier on the surface that prevents inward diffusion of water from the outside. Third, the cornified layer will become hydrated if an occlusive barrier (adhesive or heavy petrolatum) is applied to the skin; if there were an effective natural barrier on the surface, hydration would represent the normal condition. Fourth, weighed samples of hydrated stratum corneum (callus) lose water rapidly when exposed to an atmosphere of low humidity, with no indication of retardation by a surface film. Finally, removal of lipids from the skin surface by means of a fat solvent does not increase the rate of moisture loss.

It then became necessary to look elsewhere for the anatomic system responsible for restricting the rate of moisture loss from the skin and, consequently, from the body. Some studies carried out on the stratum corneum (as represented by callus) are shown in Figure 2 (Blank, 1953). The rate of water loss increases as the thickness of the callus is decreased (by sand-papering). If the curve were extrapolated to the thickness of the stratum corneum on abdominal skin (0.02-0.04 mm.), the rate of loss would be some 20 mg./cm.^{2}/hr. This is in striking contrast with the value for whole abdominal skin of 0.1-0.2 mg./cm.^{2}/hr. The cornified epithelium does not seem to be an important factor in controlling moisture loss.

In a crucial experiment, Blank (1953) measured rates of diffusion through specimens of abdominal skin, both intact and having been subjected to stripping by repeated application and removal of adhesive plaster. (This method, first described by Wolf (1940) and more recently used with great success by Pinkus (1951), has been shown to remove the cornified epithelium stepwise and in a reasonably consistent manner.) As shown in Figure 3, the first eight strippings had little effect on the rate of moisture loss, there was a sharp increase by the twelfth, and the figure was approaching that for dermis alone by the sixteenth. Concurrent histological studies showed that the first marked increase took place when breaks began to occur in the layer just below the stratum corneum, and that the highest values were seen only when much of the layer was disturbed.

By now it appears to be well established that there is, in the transitional layer between the living epidermis and the cornified epithelium, a very thin barrier membrane that limits the passage of water and other materials into and out of the skin. Much work has been done on the nature and properties of this layer, but a review of these studies is not relevant to the present discussion. The important aspect of these observations is that the stratum corneum is rather effectively separated from the underlying tissues and their water supply, and that it must, as a consequence, depend on the external environment for its moisture.

In Vivo Studies on Human Skin. Powers and Fox (1957) have used a similar approach to investigate rates of moisture loss from intact human skin. They have developed what is in effect a miniature desiccator that can be worn comfortably against the skin of the forearm. These desiccators are weighed, strapped to the arm, left in place usually for periods of two

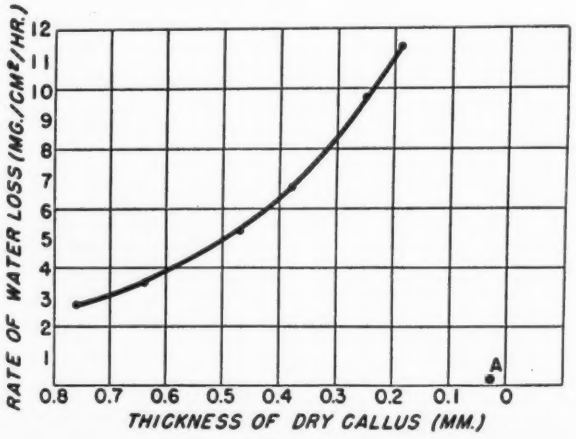


FIGURE 2

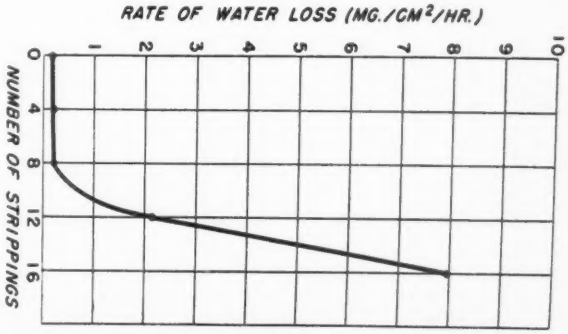


FIGURE 3

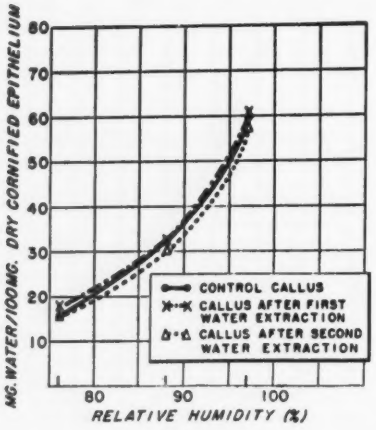


FIGURE 4

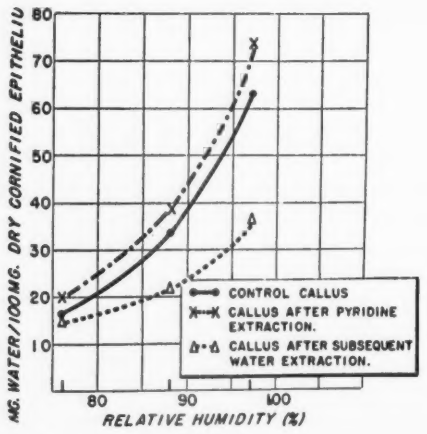


FIGURE 5

hours, removed, and re-weighed. The increase in weight represents the moisture taken up by the silica gel desiccant during the test period.

In a series of studies on normal, untreated skin, the rates of moisture loss (at 21-24° C. and 45-58 per cent relative humidity) ranged from 0.6 to 1.2 mg./-cm.^{2}/hr. In some cases, especially shortly after lunch, the values increased to as much as 4 mg./cm.^{2}/hr. Measurements on adjacent areas always gave comparable results, so that variations due to extraneous factors could be nullified by the use of appropriate controls. The values obtained are of the same order as those reported by other investigators (Mali, 1956; Felsher and Rothman, 1945; Fowle, *et al.*, 1942).

Powers and Fox then made measurements of water loss following the application of a variety of cosmetic ingredients at levels of 5-6.25 mg./cm.^{2}. Reductions in rate of up to 48 per cent were seen with a variety of lipid materials; the great inhibition was observed with U.S.P. petrolatum. An intermediate group, which included monoglycerides, had no effect on moisture loss from the skin. Finally, a few materials increased the values above the normal level. Outstanding in this latter group were anhydrous propylene glycol and anhydrous glycerine, which caused increases of 35 per cent and 43 per cent, respectively.

Further work was carried out on 10 per cent aqueous solutions of glycerine, and similar increased moisture losses were observed. From the known properties of glycerine-water solutions, it can be shown that a dilute solution of glycerine on the skin, in an environment of 30 per cent relative humidity, will lose water until the solution contains 90 per cent glycerine. If the relative humidity is lowered, more moisture will be lost; if it is raised, moisture from the air will be picked up by glycerine. The actual significance of these observations with respect to skin condition has not yet been established. Further work is certainly needed, and, as Powers and Fox point out, the behavior of glycerine in formulations that include emulsifiers may well differ from that of glycerine alone. A better understanding of the relationship of the skin to its environment is needed before conclusions can be drawn as to the role and function of glycerine.

Factors Influencing Water-Holding Capacity of Skin

In the studies mentioned previously, Blank (1952, 1953) demonstrated that pieces of callus are quite brittle when their water content is less than 10 per cent, but that they become increasingly soft and pliable as they take up additional moisture from environments of 60 per cent or higher relative humidities. Peck and Glick (1956) developed a method for direct and objective measurement of the hardness of cornified epithelium (taken from the sole of the foot at autopsy), and also found that definite softening could be induced only by water.

Investigating the properties of callus that enable it to hold considerable quantities of water, Blank found that extraction with either water or organic solvents did not greatly influence the water-binding capacity of the material. Figure 4 shows the effects of two consecutive extractions with water; some 3.6 per cent of the original dry weight of the sample was extracted each time. Figure 5 indicates that extraction with pyridine, which removed 1.8 per cent of the material, did not decrease the ability of the callus to take up moisture from the environment, while subsequent exposure to water, which extracted 21.5 per cent of the original dry weight, markedly reduced this ability. There appears to be a material present in callus that is capable of holding considerable quantities of water and that is extractable by water only after the tissue has been treated with an organic solvent such as pyridine.

Using another approach, Shelmire (1956) used uniform sheets of callus that were dried to brittleness, dipped in a variety of oil-in-water emulsions, and then examined at intervals as they were allowed to dry again. The objective was to compare the residual films from the standpoint of their ability to prevent moisture loss.

Flesch and Esoda (1957) also measured the water uptake of callus under somewhat different conditions.

(*Continued on page 246*)

Packaging and Selling

Two of Tussy's newly designed cream and lotion
jars, bottles, and cartons: opal jars, by T. C. Wheaton, and flint glass bottles, by Carr-Lowrey, have graceful line, both conceived by Design Associates and S. Kent of Tussy. Labels, by Richard M. Krause, are color-keyed to cartons and products—blue, moisture lotion, orange, eye cream. Jar caps by Crown Cork & Seal; plastic bottle caps by Mack Moulding Co. Cartons, by Container Corporation of America, are keyed to firm's advertising in color, copy, and type face.

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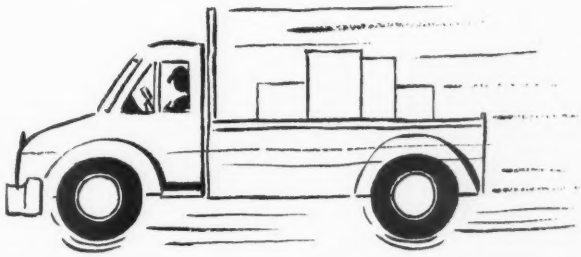
GRADING PACKAGE SUPPLIERS' PERFORMANCE



A "report card" system for grading the performance of suppliers to Lehn & Fink Products Corporation has resulted in a significant increase in efficiency and cooperation.

According to Stanley W. Burnham, who as director of purchases and package engineering set up the vendor-rating system, it has been highly satisfactory from the point of view of the company and has received wide approval from the suppliers involved.

This vendor-rating system, which is thought to be the first of its type used in the cosmetics and toiletries industry, was set up originally to provide objective appraisal of quality and delivery records of about 125 of Lehn & Fink's prime suppliers, in order to improve the company's own scheduling.

Lehn & Fink, which manufactures Tussy and Dorothy Gray cosmetics, Lysol brand disinfectant, Hinds Honey and Almond Cream, Etiquet deodorants and institutional disinfectants, had frequently suffered from late deliveries because many of its products involve packages with from six to eight components. Late delivery of one component would overstock inventories, forcing the company to make a poor showing through late delivery of its orders. The vendor-rating system was intended to pinpoint exemplary suppliers, to tighten up dealings with suppliers who were occasionally lax, and to weed out suppliers with poor records.

In practice, the system has accomplished much more than this. James E. Beyer, general purchasing agent, who handles the system, believes it has also led to far more understanding on the part of both the company and its suppliers, as well as to an increase of its volume of business with suppliers who merit it.

The suppliers graded are manufacturers of containers and packaging materials: bottles, jars, plastic and metal caps, folding cartons, corrugated boxes, brass lipstick cases, brass and plastic rouge cases, and metal drums.

Suppliers of raw materials are not included in the vendor-rating system because they are rarely late. This is because raw materials suppliers usually have such items as glycerine or talc in stock, and, since a total product requisition is made all at once, they receive proportionately greater lead time than do the container and package suppliers, who are doing custom jobs.

Package and container suppliers are rated on three scales—ability to meet delivery dates, ability to supply high-quality goods that conform to specifications, and performance in emergency situations. The ratings are so scaled that a shipment with a large number of rejects receives more demerits than one with a few rejects, or a shipment three weeks late receives more demerits than one just a week late. Credit is given for emergency deliveries or other unusual performance.

Ratings, which are made on a percentile basis, are transcribed as A, B, C, or D, and are computed each six months. Letters are sent to the executives of the firms involved, congratulating them for their high record or giving notice that their rating has dropped. The rating record is open to the individual firm concerned.

The ratings are determined in the following manner. There are eight categories for late delivery, which have covered every instance to date. Five of these, which follow, do not involve any penalty to the supplier, but were included in an over-all attempt to determine the reasons for late deliveries.

(1) Waiting for approval from Lehn & Fink, when such things as shape, color, or copy have been held up or changed by Lehn & Fink.

(2) Late arrival of material from Lehn & Fink, when a supplier has had to wait for such items as a box label from another Lehn & Fink source.

(3) Transportation delay—Lehn & Fink error, for instance, should Lehn & Fink fail to tell a supplier the fastest method of transportation, or advise a supplier to freight a delivery when trucking would have been faster.

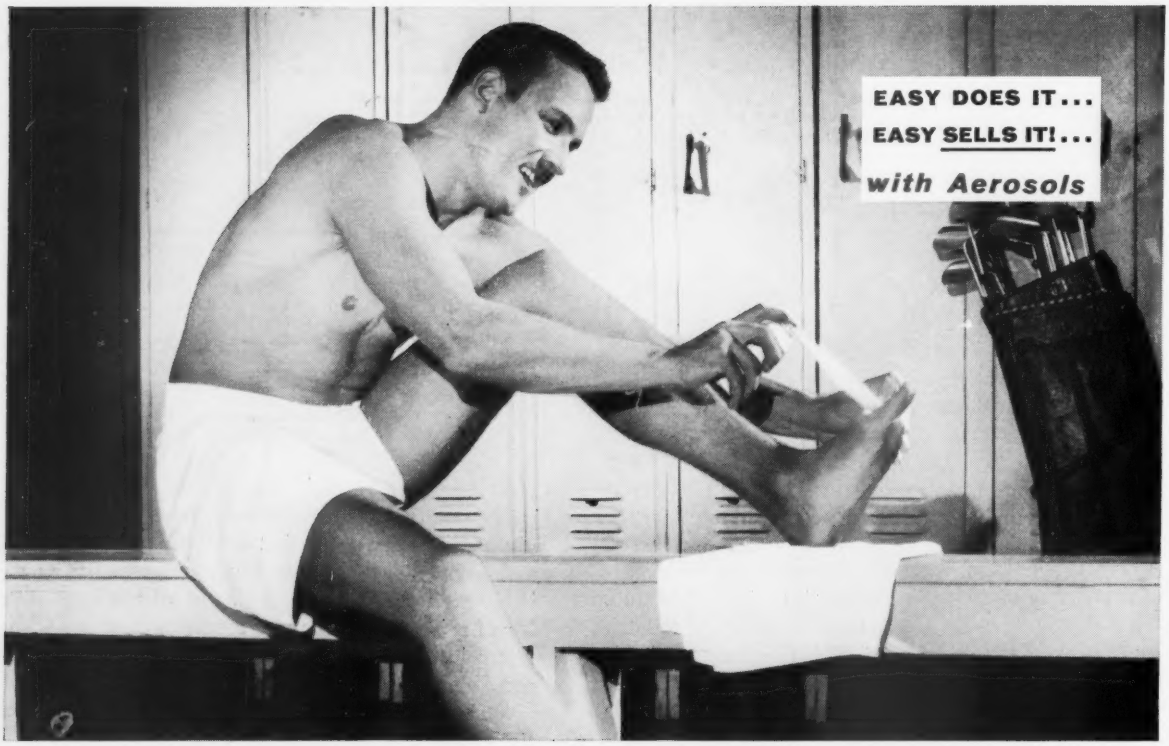
(4) Insufficient lead time.

(5) Acts of God—fire, unwarned strike, truck breakdown.

The three categories that do involve penalty to the supplier are these:

(6) Change in specifications due to supplier's oversight, for instance, the supplier's having to rework a die, or encountering kinks in his production.

(Continued on page 256)



The Magic Touch of Aerosol Packaging could be your Rx for bigger pharmaceutical sales

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We will also be glad to put you in touch with highly capable contract fillers, who can put up small test runs for you or handle full-scale commercial production. They will work with you from planning and testing through to volume filling. You don't have to invest a cent in equipment or production personnel when you work with these contract fillers!

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PALLETLESS HANDLING OF GLASS CONTAINERS

BY J. F. BROWN ANCHOR HOCKING GLASS CORPORATION

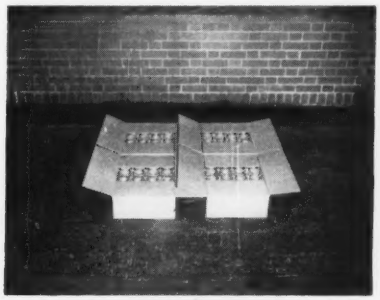
With the continued growth of glass container business and emphasis by customers on reduction of their materials handling costs, the volume of unitized shipments has been steadily increasing in the glass container industry.

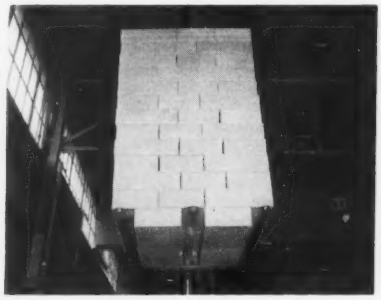
This unitizing of shipments has resulted in special handling and loading problems for the industry, which are further complicated by a lack of uniformity in unitizing methods.

The following diversified loading methods are now being used in the glass container industry.

Manual: Straight stacking; Bonded block
Unitized: Palletless
Anchor-Hocking fork method—Flap; Wrapper
Clamp
Handling sheets
Grip-tine
Unitized: Pallet—Returnable; Nonreturnable

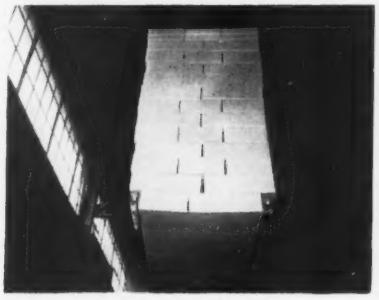
Of the four palletless methods shown, the one growing most rapidly in importance in the glass container industry is the Anchor-Hocking fork method, origi-





Anchor Hocking's flap type unit load handled with three forks. At the left, the base cartons are shown positioned with two unsealed flaps of each carton opened. Above, bottom view of the unit, showing forks supporting the load as they carry the base cartons by their open flaps.

The flap type unit load, here handled with five forks. At the left, base cartons positioned with two of the unsealed flaps of each carton opened. Above, bottom view of a unit, showing how forks support the load and, at the same time, carry base cartons by their flaps.



Anchor Hocking's wrapper type unit load handled with two forks. Left, the base cartons positioned in a wrapper, showing projecting edges. Above right, the bottom view of the unit, showing how forks lift the load. The wrapper is specially scored, carton flaps remain closed.

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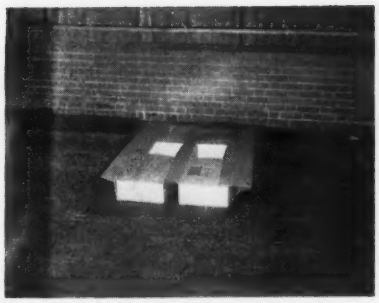
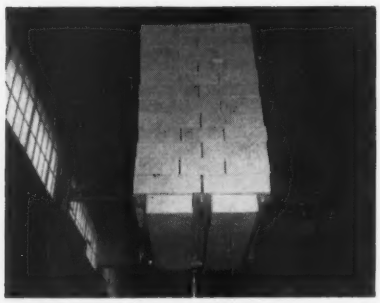
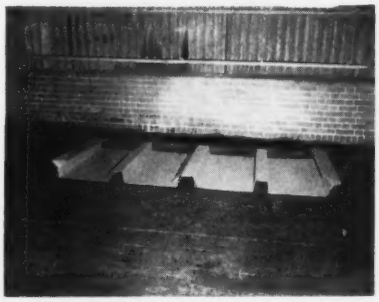
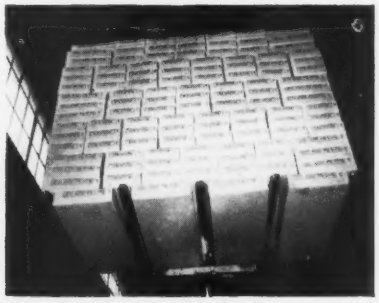


The wrapper type unit load, which is more suitable than the flap type for cartons with sealed tops, very small cartons, and for trays. Above left, the base cartons positioned in the wrapper. Above right, a bottom view of the unit, showing how three forks lift the full load.





The wrapper type unit load handled with five forks. Above left, the wrappers positioned for building the unit. Above right, the bottom view of the complete unit showing the forks. The fork method makes it possible to tailor size and shape of the unit load to fit carrier.



Above left, three forks used for handling both wrapper and flap type units. Right, the five-fork attachment for handling both type units (or two small pallets simultaneously). Advantages are reduction in loading and unloading time, trailer dock time, often the number of docks.

nated by F. C. Sandusky of the Anchor Hocking Glass Corporation's Salem, N. J. plant, in May 1957. For two years Anchor Hocking plants have been making shipments by this method to some major customers. It offers a great potential for economy and simplification of handling. In addition, it makes available a versatile and standard method of unitized handling. Because of the low initial cost of the lift-truck forks required, and because they require virtually no maintenance, this method offers great advantages to the operations of both glass manufacturer and customer. These forks are also compatible with the pallet system.

The Anchor-Hocking unit is designed with spaces for the insertion of forks in the base of the unit. Two or more forks are used to handle a unit, depending upon its design, its load dimensions, the size and shape of the cartons, the arrangement of the base, and the customer's handling equipment and plant facilities.

The forks differ from standard pallet-handling forks only in that they are narrower, have rounded, untapered tips, and are sometimes offset so they can be extended beyond the lift truck's carriage width.

Anchor Hocking has developed two types of unit loads, designated as Flap type and Wrapper type.

A Flap type unit has two of the unsealed flaps of each base carton opened and spread out. Lift truck forks are inserted in the base of the unit under the open flaps and, when raised, hold the flaps against the bottom of the next layer of cartons. The forks support the unit when it is moved, and at the same time carry the base cartons by their flaps, without damage to the cartons.

In a Wrapper type unit, a specially scored sheet

(*Continued on page 284*)

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Packaging and Selling

As we start this new year, we have two positive plusses for the cosmetic industry.

One plus is the almost universal feeling that 1959 was the biggest year in cosmetic history, probably the biggest Christmas, and certainly the year which closed with the highest degree of optimism spread over the broadest area.

The second plus is, again, an almost universal feeling that 1960 will be even better than 1959.

Even if these glowing hopes materialize, it still must be said that there are portents and omens of new or increasing problems for this industry.

It is not news that house-to-house cosmetic sales have been growing at a rate far exceeding the average growth of the industry every year for at least ten years and that, in 1959, this favorable ratio of growth for the house-to-house companies was undoubtedly accelerated. All anyone has to do is look at the Avon statement for a vivid picture of this growth.

Of course, Avon is far ahead of everyone else in their field and does not present a typical picture of this part of the industry. Also, it must be said that, of all the house-to-house companies in the cosmetic business, there are two or three who are not doing particularly well. It is true, however, that in addition to Avon, several companies in the 2 to 12 million dollar annual volume class are expanding rapidly and show every sign of substantial growth ahead of them.

In addition, it must be noted that new companies are coming into this house-to-house field, and that some of the important interests in the cosmetic business from the viewpoint of experience and resources are looking greedily in this direction.

The point of all this is that the total of house-to-house sales in cosmetics in this country shows a startling percentage of total cosmetic sales. And the growth record of all these companies undoubtedly shows by far the most favorable growth situation of any part of the industry.

In other words, house-to-house selling is reaching a mature status, which means a serious threat to cosmetic retailing and a serious threat to manufacturers selling through retailers.

The other portent of what may come is the growth of the private label in retail stores. True, this is not yet a factor in cosmetics, but it is a factor, a tremendous factor, in the food industry and, according to some speakers at a recent meeting of the American Marketing Association, it is destined to be a big factor wherever there are big retailers. Curiously enough, the private label seems to flourish best in the shelter of heavily advertised competing manufacturer's brands, rather than in a field that is largely unbranded.

The cosmetic manufacturers who sell through retailers have aggressively taken into their own hands practically all the functions of selling, that is, these manufacturers—or at least the bigger ones—have been determined to spend enough money to pre-sell their goods, even though they are still paying the retailer the full commission and all the other donations that the retailer receives, presumably in payment for doing some selling.

This piling of very heavy annual advertising expenditures on top of very heavy retail selling expenses has for many manufacturers brought about a cost of selling goods through the retailer which is such a high percentage of sales that they are extremely vulnerable to other methods of selling.

Moreover, quite a few people are waking up to a realization that, for most manufacturers and most advertising campaigns, this business of any substantial degree of pre-selling the consumer is often an illusion which the retailer manages to brush aside whenever it suits his purpose, and which does not seriously hinder the consumer from turning her purchases in any other direction which interests her.

If direct selling, now deeply entrenched in the cosmetic industry, and retail private labels, not yet a substantial factor in this industry, continue their ratio of growth, and if private label ever finds a suitable economic position in this trade as has happened in food and several other industries, then, in our humble opinion, this industry is headed for some very headachey problems.

There is a lot more to sending a Christmas card than you might think. According to a report in *Business Week*, Dr. Ernest Dichter's Institute for Motivational Research, Inc., has just made a survey with depth interviews which reveals the true and secret attitude that people have toward cards even though they may not, themselves, be aware of it.

It seems that, when a company has been sending cards and stops, people resent it. On the other hand, a card is an economical way for a company to achieve "emotional rapport" with its customers.

Also, according to this report, there are hints that bankers who stop sending cards are somehow insecure.

We are very happy to say that the Chase Manhattan Bank, where we keep the few bucks that we possess, sent us a Christmas card. We would not like to think that these folks feel insecure.

Here's advice from one of the big experts in advertising:

"What the consumer wants in advertising is a justification for catering to the selfish whim. A soft drink should be described as thirst-quenching or 'sociable.' A candy should be an energy pick-up—not a delightful sweet."

This means that if you have something that appeals to the selfish instinct of anyone, you are all set for 1960 with a good advertising theme.

Armour & Co. evidently took quite a gamble and made quite a successful move when they switched the packaging of their liquid detergent to a plastic bottle. We have seldom seen so much general publicity in a package change in years. This publicity ran all the way from a feature in *The Wall Street Journal* to most of the business and trade magazines.

Armour's big soap competitors have all been experimenting with a plastic bottle for detergents, but Armour got their first, and reports are that the sales results have been highly gratifying to the company.

Armour's new package is a rigid polyethylene container, aqua-colored and pinched-waisted. It comes in three sizes, that is, 12, 22, and 32 ounces.

According to people in this division, the new plastic container was selected because of its light weight, easy grip, and rust-proof features. A case of detergent in these plastic containers is about two pounds lighter than one of tin plate cans.

While cost of the plastic containers averages more than the cans at present, expectations are that this will level out. As of now, a 12-ounce plastic bottle is cheaper than the can, a 22-ounce about the same, and a 32-ounce slightly higher.

First, they Moved, then they Talked, and now they Smell. This is a nut-shell summary of what is supposed to be the big new thing in moving pictures, Smell-O-Vision—a process by which a series of perfumes or aromatic substances are pumped into the movie theater during the course of special films.

The biggest new smell in the movies is the film "Scent of Mystery," produced by Michael Todd, Jr.

Mr. Todd is said to have poured around $2 million into tying a succession of odors in with the scenes of this movie. Over a mile of plastic pipe has been installed in the theater, which he owns. The pipe, which runs through each row of seats in the theater, contains a tiny perforation beside each seat. Odors are pumped up through the pipe and out into the theater through the tiny holes. The appropriate smell is triggered automatically by signals on the film's soundtrack.

All the odors used have been checked with toxicologists for allergy reactions and, since so small an amount of each individual odor is pumped in, the ventilating system is said to be large enough to remove it completely.

So far as we can recall, this is certainly the most massive use of perfume or odor in any application outside of the traditional uses of perfumery. Another show, said to have had a slow start, was the recently launched Aroma-Rama, a multi-scented picture of China. According to reports, it has been somewhat disappointing.

America may have invented the supermarket, but apparently Great Britain is inventing the super wholesaler.

According to the English magazine *Scope*, "a unique self-service store is to be opened in Edinburgh shortly . . . unique because the customers of this new supermarket will be shopkeepers. And this will be the first of a chain of similar stores to be established throughout Britain."

According to this report, smaller retailers hope that by using this bulk-buying method they will be able to combat the threat to their trade from the ever-booming combines and supermarkets. Under this new system the grocer will drive his van in, select his goods, pay for them, and drive off again.

According to the quoted statements of John T. Connor, Merck's president, the company has set up an elaborate system of controls to assure the accuracy and integrity of its ads.

The company has a codified advertising and promotion policy which "spells out exactly what advertising content and character are to be."

According to this Washington testimony, the advertising of a drug begins with what is called the copy platform. This is determined at a meeting attended by several doctors, advertising agency representatives, and men from Merck's own advertising, sales, and marketing departments.

After this copy platform is decided, each ad is built from this platform, and every step on the way, from rough layout to final proof, is approved by Merck's medical, control, and ad departments, and also the legal department.

Our old friend Charlie Granville, who heads Angelique Perfumes of Wilton, Conn., made famous some years ago by *Life* as the skunk factory, is at it again.

Charlie had no sooner finished perfuming the Gulf Stream as a Christmas present to the people of England, than he arranged to place a capsule of Black Satin Perfume in the satellite being constructed to orbit the planet Venus.

According to eminent physicists, when the satellite reaches the gravitational field of Venus the capsule will be released and the perfume odor will then be

drawn to the surface of the planet.

We take it for granted that the people on Venus, if there are any, will consider this a complimentary gesture from a sister planet, Earth.

We have just received the 1959 Beauty Survey by *Redbook*. This is a comprehensive survey of cosmetic usage among the magazine's readers.

Interesting features include a breakdown into age groups, a breakdown by employment status, and, what is particularly valuable in market analysis for cosmetics, the frequency of use.

Another interesting feature is the study of daily beauty habits and routines. That is, a report by age groups of just how the day is broken down into cosmetic application.

The Minneapolis Star and Tribune has just sent us their most recent survey covering the buying habits on cosmetics within their area. In a quick glance we spotted two interesting things.

One, the use of home permanents has dropped from 60.5 per cent in 1955 to 46.5 per cent in 1959. That really reverses a substantial growth trend of our industry.

The second interesting thing is that house-to-house sales are averaging somewhere in the neighborhood of 20 per cent in this metropolitan market. For one product, hand cream, Avon does 27.4 per cent of the business.

One of the nastiest tastes we have had in our mouth for quite a long period was stimulated by reading the current Barbasol advertising in a daily newspaper. We would say that this is about the crummiest pun in the smelliest bad taste that we have seen in the advertising of any company in this trade for a long, long time.

In the next decade, drug retailing's big baby will be the super drugstore, located in the community and regional shopping center. This opinion was voiced by Charles R. Beall, vice-president of McKesson & Robbins, at the company's recent sales conference in Houston.

Mr. Beall predicted that by 1970 average drugstore volume will be $250,000 a year and average selling area, 3,600 square feet, as compared with the present average of 1,800 square feet.

Although the druggist is expected to step into a much broader field of merchandise, this does not mean that he will lose his traditional volume and prescriptions. Mr. Beall believes that by 1970 drugstores will do 50 per cent of this volume from prescriptions.

At the same conference, another company vice-president, Henry H. Henley, Jr., also emphasized the growth of shopping centers. "Today," he said, "most new stores are opening in shopping centers—50 per cent of the new grocery stores, 77 per cent of drugstores, and 83 per cent of the shoe stores.

"New products will glut our markets in the '60's. In the drug field alone, it is expected that 50 per cent of retail sales in 1965 will come from products not existing today."

"Tomorrow's consumer will be more loyal to the store and to a group or type of product rather than a specific brand."

We think that Mr. Henley will encounter plenty of husky difference of opinion on that last remark. The last ten years have marked a major trend of all selling decisions away from the retailer to the manufacturer. As a matter of fact, a high percentage of the retailers, and this includes specifically the super type of store, with the exception of their own private label, has openly and eagerly abdicated all selling to the manufacturer.

Right now, practically every retail store—and, we are quite sure, in the buying office of McKesson & Robbins—the first question asked of any manufacturer is, What kind of a consumer demand do you have for this product? Woe unto the manufacturer whose product is unknown to the public! On the other hand, out comes the welcome mat to the manufacturer who has already done the whole job of selling for the retailer among his consumer customers.

We do not think that tomorrow's customer will be more loyal to the store. As a matter of fact, with the trend of modern marketing we think that retailers will be lucky to retain the rather doubtful and questionable loyalty that most of them have right now.

As to Mr. Henley's second point, that the customer will be more loyal to a group or type of product than a specific brand, we think this is even further afield in view of current trends in advertising and marketing, which appear very likely to continue.

If Mr. Henley meant that the retailer could really assert his independence, regardless of the pressure from the consumer for specific brands, which overwhelms the average retailer and stifles so much of his initiative, we agree that an independent fighting retailer could do a great deal of brand switching and emphasize the product, rather than the individual brand. He could do this, regaining control of his own store by using his display space to feature the brand he prefers and which he thinks best for his community. Certainly the records of marketing are filled with facts which prove beyond dispute that, if the retailer wants to, he can control the sales of brands within a store and run his own business.

To date we do not see the tiniest cloud on the horizon that any retailer wants the manufacturer to give up in the slightest way the pressure he is bringing to bear on the consumer to make the retailer do pretty much what the manufacturer wants, at least so far as displaying his particular brand is concerned.

PHOTOGRAPHY BY DICK BOYER

BERNARDIN closures keep good company!

The trust inspired by a brand name such as Kraft is a priceless accolade bestowed by the consumer for the integrity of a product and its maker. Such an asset naturally is carefully protected. And sharing in that responsibility are the suppliers of accessories (like closures, for example) with the same standard of integrity. Such we like to believe is our relationship with the trusted name—Kraft. *May our Closure Craftsmen work with you?*

From all the signs and omens and portents that are visible today, the successful brand manufacturer will continue to control the customer's loyalty to his own brand, rather than let this loyalty drift to the store or to the product group.

Just in case you happen to think that motivation research is the private preserve of American industry, or that we are the only ones going pretty far afield in applying it, here's what a leading British service is doing for English companies. "In a new technique perfected over the past 18 months salesmen are exhaustively quizzed in the field by statistical experts on their attitudes to their work, the employer, the product, the customers, the firm's advertising, its reputation in the trade, etc."—a magnificent idea.

If it did nothing more than to give salesmen a full and free invitation to gripe, with an opportunity of getting all sorts of things off their chests, we are quite sure that the survey would be well worth it.

It looks as if we can expect once more to hear a lot about the Robinson-Patman Act. So far as this trade is concerned, we have had a relatively peaceful period when everything has seemed to go along smoothly. Now, however, a series of talks by FTC people, plus the new move to appoint a special task force to explore violations of this act, indicate another period of active investigation.

This is a good time to remember that the act has two edges. As a chairman of the FTC recently stated, two of the primary objectives of the act are (1) to prevent unscrupulous buyers from abusing their economic power by exacting from suppliers price and other forms of discriminatory concessions, and (2) to prevent unscrupulous suppliers from attempting to gain an unfair advantage over their competitors by discriminating among competing buyers.

The management of any company involved in interstate commerce is apt to be plagued for a while in the future by the Supreme Court decision that a state can impose a net income tax on earnings of a corporation across state lines if that income is fairly apportioned and reasonably connected with activities in the taxing state. According to the Court, an income tax by a state on business is not a burden because the tax is only paid on net profits made within a state.

Of course, paying an income tax in every state in which a company does business is an appalling thought and, therefore, company executives will find it essential to look over their distribution system and check very carefully in order to avoid future action by the tax authorities of any state.

Congress is said to be making a complete study of this whole question and, in the meantime, it has provided some slight relief.

Here, briefly, is the current state of affairs.

You can not be taxed by any city or state in the future on income derived in that state from interstate trade if you are merely seeking orders in that state for sales on tangible property, if these orders are sent outside of the state for approval, and, if approved, they are filled by shipment from a point outside the state.

In other words, an out-of-state corporation cannot be taxed on the basis of business activities within a state merely because it solicits orders for sales in that state for tangible personal property by an independent manufacturer's representative whose activities consist solely of making sales or soliciting orders for sales elsewhere.

A large area of confusion lies in the way orders are sought by the manufacturer. For instance, if a sales office within a state is staffed by direct employees, then the state, without question, may seek a tax.

Probably the state will examine with a legal eye those situations in which there are factories, warehouses, sales offices or full-time manufacturer's sales representatives operating from a local manufacturers' office.

This seems to be the thing to watch out for.

"Today there are 75 different types and shapes of containers for aerosols compared with just two stock containers available just 10 years ago. We can expect to have at least 150 containers to choose from by 1965." So said Douglas Atlas, vice president of G. Barr & Company of Chicago and New York.

Mr. Atlas pointed out that aerosol product development has matured "from the inside outward," with technological research pointing the way for advances in package appearance. "Aerosol chemists have found the answers to proper spray performance, to corrosion prevention, to long shelf life and other elements of product efficiency. All along the way, container researchers have met these chemical advances with improvements. They started with the basic drawn cylindrical container, and went on to the tin plate seam can, the glass container, plastic, and aluminum.

"Glass significantly helped the development of pharmaceutical aerosols by preventing corrosion. And for toiletry products, glass contributed the glamor of eye appeal."

We would like to add to the remarks of Mr. Atlas by stressing the point that it was almost entirely the opening of the cologne market and the interest of cologne manufacturers that gave the great impetus to finding a variety of forms and materials for the aerosol package which would conform to the style, beauty and glamor required in a perfume package. Now that so many opportunities are opening in pharmaceutical packaging, we expect to see a new challenge that will stimulate new, creative developments in aerosol packaging.

News in Packaging . . .

Challenges of the Sixties

One aspect of the Annual Industry Convention sponsored by the Association of American Soap & Glycerine Producers, Inc., in January, was eight round table discussions running concurrently, which then reported to a general session of the convention. The discussion on package design was led by Walter P. Margulies, president of Lippincott & Margulies, Inc., and recorded and reported by Kenneth Fulton of the Beach Soap Company. Some of its main conclusions are summarized below.

The greatest opportunity for manufacturers during the next ten years will be to design products and packages with which consumers can readily identify themselves.

In the first place, advertising costs have increased during the past 20 years at a rate of twice that of sales, and three times that of profits. With the expected increase in population in the U.S.A., products, advertising, and competition can be expected to increase proportionately. Today, it is estimated that 1581 advertising messages are presented daily in this country, most of which the consumer misses.

Consequently, more efficient communication is necessary. At the moment, there are 600,000 registered brand names, of which 350,000 are in use. The average supermarket carries 5000 different products—the problem of communication within a given store is a real one.

The major factors to be considered in more effective communication by means of packaging design are: (1) the name, which can completely destroy the most effective marketing program if it is poor; (2) color, which is extremely important in its effect on the consumer's capacity to identify himself with the product; (3) product differences, which must be manifested in packaging; (4) format and design, which must be in accord with the market potential, since people identify themselves with the products they buy and use, whether they know it or not; and (5) market research, both qualitative and quantitative.

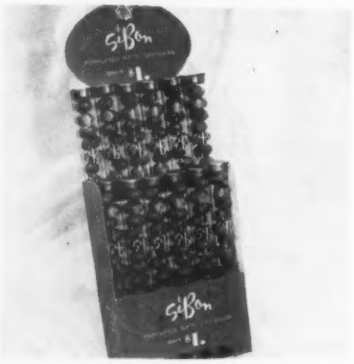
In designing a package, objectives must be clear, especially in three areas: (1) anything about the present product that consumers dislike; (2) a complete evaluation of competition; and (3) whatever can be done to get consumers to prefer this product in relation to the claims of competitors. A packaging problem must not be isolated; it is a marketing and communications problem. And better package design will define product advantages, describe the product more clearly, and back up advertising at the point of sale.

Mechanizing to Speed Order-Handling

Another of the discussions concerned warehousing and shipping. It was led by Donald D. Derricott, Food Machinery & Chemical Corporation, and recorded and reported by R. E. Crowley, Colgate-Palmolive Company.

Proper warehousing, shipping, and distribution facilities, all agreed, have become one of industry's biggest problems because of neglect. Thorough overhauling is essential for most industries. Individual companies each present their own peculiar needs and problems, which must be studied by qualified consultants.

Prince Matchabelli's Spring Fancy spray puff talc, a push-button package that aerates powder on application, which is one of the new products in the five-item Spring Fancy line.

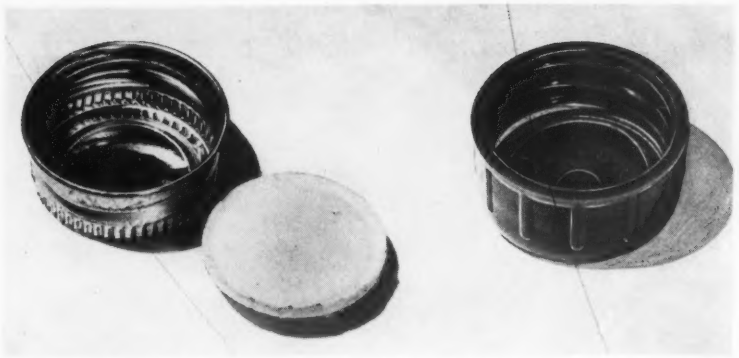


Perfumed bath capsules added to the SiBon bath line by Monico, Inc. Fifteen turquoise capsules are packaged in each plastic tube, with white and gold screening. Cost, $1.00.

Tapered bottle by Hazel-Atlas Glass Division, Continental Can Company, for Richard Hudnut's new ice blue hand lotion. Urea cap by Armstrong Cork Company, white oval labels by Don Rico, printed in green and circled in gold, embossed with Hudnut coat of arms.

Schering's Meti-Derm spray, topical dermatological medication now marketed in Italy, manufactured by Societa Italiana Prodotti Schering of Milan, Italy, licensee; valve and actuator by Solofrene S.p.A. (also Milan), licensee of Risdon Manufacturing Company.

NR laxative by Lewis-Howe Company in a new flat-hinged package that opens when pressed at the corner. White flower carrying logo suggests freshness, appears on Regular package against red, on Candy Coated package against green, on Junior package against blue.



The Dover Company's Un-A-Top, new one-piece plastic can or bottle top that requires no liner.

A One-Piece Can or Bottle Top

The Dover Molded Products Company, 1000 East Avenue, Dover, Ohio, has introduced Un-A-Top, a cap that requires no liner, because a seal is molded into place as an integral part of the cap.

Sealing is achieved by the engagement of the Un-A-Top (patent pending) seal's grip over the lip of the can or bottle spout. The seal has at the same time the resiliency necessary for easy screwing, on or off.

As a result of the elimination of a liner, prices for Un-A-Tops are in line with those for liner-equipped aluminum or tin plate screw caps. Moreover, savings are possible, by elimination of liner stocking, shipping, and inventory.

The linerless caps can be manufactured in a wide range of colors, and the design makes the cap adaptable to a large variety of types and sizes of containers. Various thermoplastics of differing properties may be specified.

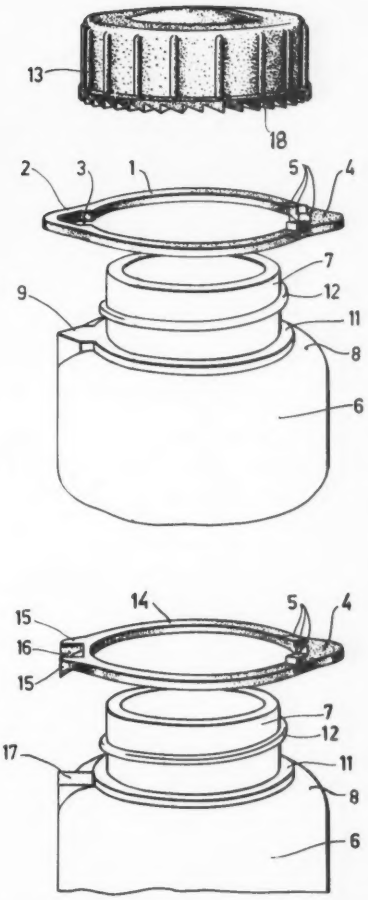
The caps are noncorrosive, and they can be either embossed or engraved.

A New Safety Cap

Astra International, Division of Ab Astra, Sodertalje, Sweden, has devised a screw-cap locking device for jars.

The figures to the left show two variations of the invention, for which patents have already been issued in Great Britain, Western Germany, Sweden, Australia, Austria, and Italy, among others. The device consists of a ring (1 above, 14 below) of a resilient material which fits closely below a screw cap (13) and is nonrotatable in relation to the jar (6). Both the ring and the lower edge of the screw cap have coacting serrations (5, 18). These are disengaged when the ring is pulled away from the cap, which can then be unscrewed.

The ring has two opposite protuberances (above, 2, 4). In protuberance 2 the notch (3) fits over the shoulder (9), engaging the notch and preventing the ring from turning. The teeth on the cap snap over these on the ring when the cap is screwed on, allowing for the tightening of the cap. When unscrewing, the lip (4) on the ring is pulled downward, disengaging the teeth and setting the cap free. In the lower figure, the locking ring (14) has a differently shaped protuberance (15) and notch (16), but they function similarly.



A safety closure for pharmaceuticals achieved by a screw-cap locking device (see description at left) for which patents are already issued in several countries.

Nature, a new home permanent wave manufactured for and distributed by Direct Selling Inc., which is said to contain no thyoglycolic acid or its salts, is packaged in plastic bottles—conditioning, waving, neutralizing, and finishing lotions. Dispensing tip, cap, instructions included.

Squibb's Kenalog (triamcinolone acetonide), now available in aerosol spray form, for acute lesions and areas hard to reach, in 2 sizes.

Your challenge of the *EXCITING 60's*

THOUSANDS OF NEW PRODUCTS!

ANCHOR HOCKING'S COMPLETE LINE LETS YOU SELECT THE RIGHT GLASS CONTAINER AND CLOSURE TO HELP YOU MEET THE INCREASED COMPETITION! More new products of every kind will be introduced during the 1960's. This means more and more competition for the consumer's dollars.

How big a share of these dollars you get may well depend upon your product's package. To help you package your products most attractively and effectively for the competitive markets of the 60's, Anchor Hocking offers a complete line of glass containers and metal and molded closures.

Anchorglass® containers are supplied in crystal, amber, emerald green, georgia green and opal glass—in all standard styles, sizes and finishes. Anchor® molded caps in black, brown or other colors—and lacquered, coated or privately decorated Anchor metal caps—are available to meet your individual requirements. Anchor Hocking's complete line provides important glass packaging flexibility and capacity to help you meet your challenge of the 60's. Anchor Hocking Glass Corporation, Lancaster, Ohio—bringing you the extra values of *specialization* in glass packaging.

ANCHOR HOCKING

Get set for the exciting 60's with Anchorglass Packaging
—put an Anchor Man on your team

NEWS and VIEWS

BY TED KLEIN PUBLIC RELATIONS DIRECTOR*

Gifts and Trips

When is it ethical to give a present to a reporter? When do you plan an extensive tour of your plant and invite reporters to attend as your guests? These two questions were the beginning of a two-hour discussion at a recent meeting of public relations men in New York City.

A panel of three first explained their various personal attitudes. One was the dean of an important school of journalism in New York. Another, the managing editor of a mass circulation business magazine. The third was public relations director for a large oil company.

In substance, the three men agreed that gifts to the press worth more than $5.00 or so are taboo. They don't believe that management of companies should permit it. They also think that the individual reporter who accepts a gift will eventually get into trouble with his boss, and thus, the purpose of creating goodwill for a company will be not only subverted, but the opposite will take place.

The interesting part of the meeting for me was the talk about plant tours, junkets, trips, or whatever you call it when a company or a country invites a group of reporters to visit, all expenses paid. Since many large drug and pharmaceutical companies are now in the process of expanding their facilities, and since many may be planning press tours, the conclusions of the panel may be helpful.

It was agreed that, if you are planning a trip, you had better be sure that all the details are well organized. However, the danger of over organization can result in tired and disgruntled reporters who won't be in the best of spirits to write about your firm.

Don't expect to get good stories just because you are paying the bills. If there is material that warrants good coverage, then you will get it. If there is just the average sort of news, then you would be better off in not having the tour in the first place.

Invite the press in a group. Don't play favorites. When one man is invited, it seems to him that he is expected to write something about the trip. If it's an open event to all those who would be interested, then a good reporter knows the ground rules. If he's singled out to come, then he will probably refuse unless he smells a story, one that would "scoop" the industry.

You can count on fair coverage, but don't be surprised to find something you would rather not have appear in the story. Good reporters have a nose for news, and, when they are looking and asking, they can usually find out a great deal. Don't invite them unless you have nothing to fear.

Trips are expensive. Some news people will ask to pay their own way, but generally the feeling is that if you invite them, you are expected to pay for travel, food, and any accommodations.

Wallerstein Goes to the Presidents

One week last month, each chief executive officer of about 24 drug and cosmetic companies received via uniformed messenger an eight-pound gift box of the Parker Brothers game, Monopoly.

Each box contained a sample of Wallerstein's antibiotic Rapicidin, along with the complete game. The theme of this unique promotion, utilizing what is essentially a game of real estate and banking, is "after you lose all your money in 'real estate,' you can make another million with Rapicidin."

Gerry Gray, manager of pharmaceutical sales for Wallerstein, a division of Baxter Laboratories, recently said, "this promotion is based on the fact that we knew only a few large drug firms would be interested in the idea of putting our antibiotic in some of their products. It therefore was not feasible to advertise this product nationally."

Wallterstein will follow up the gift with complete technical information on the drug, so that product development men will have a chance to see how they might utilize it in their own line. Several very encouraging replies have already been received.

Ciba's Sign

Not too long ago, Jim Beattie, director of public relations for Ciba, found out that the Newark Airport would rent space for a sign just above the east entrance of the main waiting room, through which 280,000 people pass every month.

Nine months ago, Ciba leased the space, through Transportation Displays, and placed a 26 by 12 foot, white-on-white mural there. It's one of the best designed displays in the entire air terminal, and one which points up the role research plays in Ciba business.

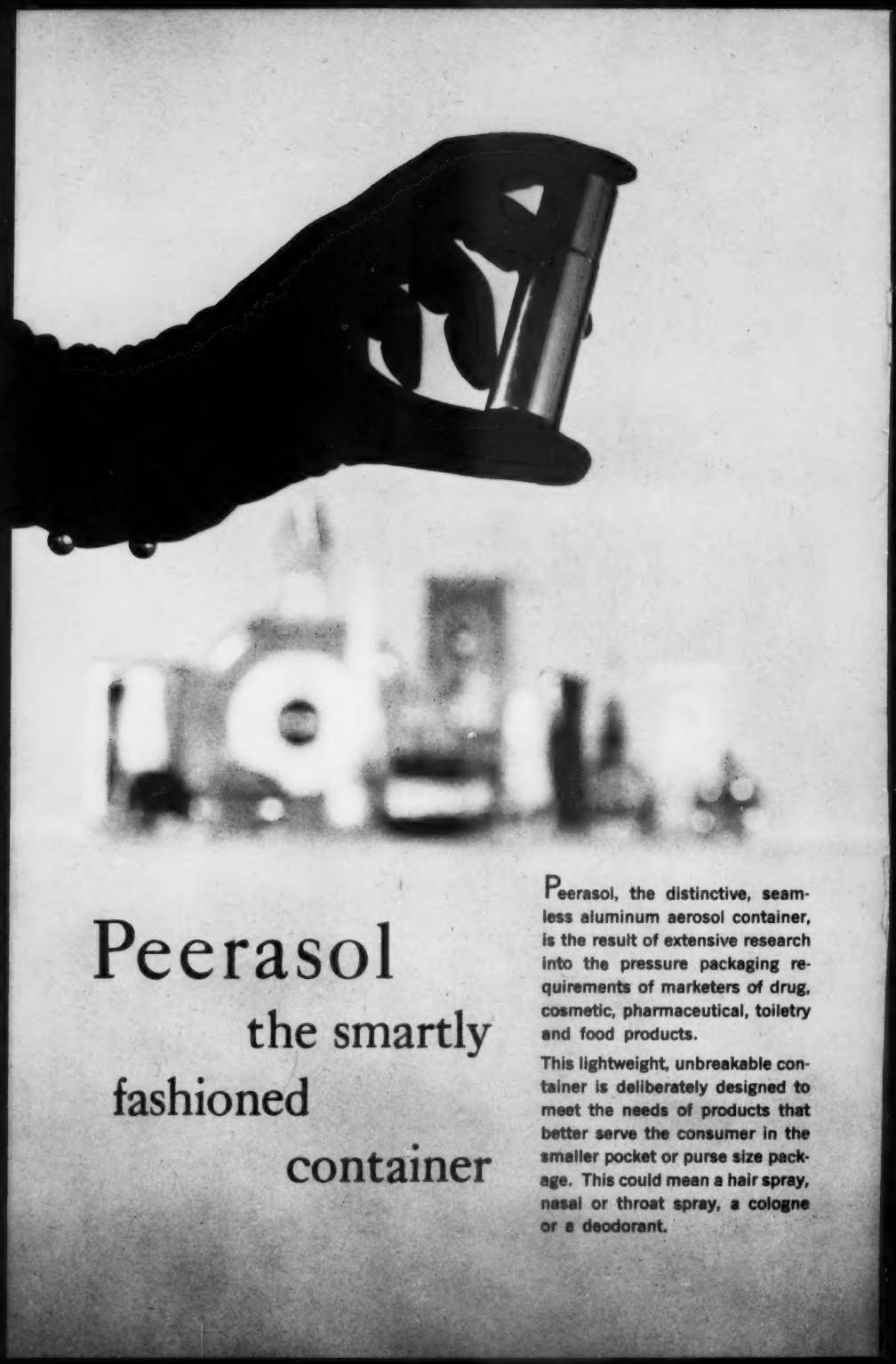
Gayl Hoftiezer, visual communications specialist in Ciba's public relations department, reports that in a study conducted recently at the airport, 18 out of every 100 people who passed through the doors saw and remembered the mural.

*Paul Klemtner & Company, Inc.

Peerasol*

containers

Tradename of aerosol containers manufactured by the Peerless Tube Company



Peerasol

the smartly fashioned container

Peerasol, the distinctive, seamless aluminum aerosol container, is the result of extensive research into the pressure packaging requirements of marketers of drug, cosmetic, pharmaceutical, toiletry and food products.

This lightweight, unbreakable container is deliberately designed to meet the needs of products that better serve the consumer in the smaller pocket or purse size package. This could mean a hair spray, nasal or throat spray, a cologne or a deodorant.

These types of products are usually carried in purse or pocket. As a result there should be no leakage or breakage of the package. Peerless solved the leakage problem by eliminating the causes, namely, the seams and at the juncture of the container opening and the valve cup. The extruded one-piece, seamless construction of Peerasol and the assurance of a precise valve cup fit as a result of a patented manufacturing process has placed Peerless in a position of leadership in the development and manufacture of the smaller size aerosol container.

The Peerasol container has a high fashion appeal because of its small size and the attractive, high quality lithographic methods used in decorating the package in one to four colors over a base coat.

Peerasol is another development of the Peerless Tube Company, a pioneer in the manufacture of collapsible metal tubes as a package for commercial use. Peerless can rely on more than a half a century of experience and know how in the field of consumer packaging in creating and producing the aerosol package to fulfill the needs of manufacturers of drug, cosmetic, pharmaceutical, toiletry and food products.

Peerasol containers are used for a wide variety of products

More and more drug, cosmetic, pharmaceutical and chemical specialty products, both new and old, are found in a Peerasol container, the modern package for today's marketing and merchandising techniques.

Rezifilm
SQUIBB
SURGICAL
medic
AVANT
Little Girl
AEROSOL

Peerasol—sizes and capacities

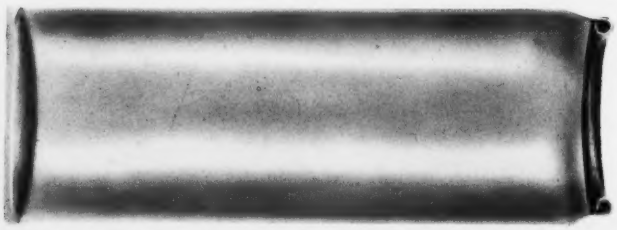
Diameter × Length	Fluid Ounces	C.C.
7/8" x 2 9/32"	1/2	14.8
7/8" x 3"	3/4	22.2
1 1/4" x 4 1/32"	1 4/5	53.3
1 3/8" x 2 1/2"	1 4/5	53.3
1 3/8" x 3"	2	59.2
1 3/8" x 3 3/16"	2 1/4	66.7
1 1/2" x 4 3/16"	3	88.8
1 1/2" x 4 11/16"	3 1/2	103.6
1 1/2" x 5"	3 3/4	111.0
1 1/2" x 5 5/16"	4	118.4

Note: Capacities shown are approximate fill capacities. Standard openings for 7/8" diameters are 20 millimeters and all others are standard one inch openings.

Inside coatings

Long a pioneer in the internal coating of collapsible metal tubes, Peerless has drawn on this heavy experience to perfect protective internal coatings on Peerasol containers. In addition, Peerless has perfected coating processes using phenolic and epoxy-type resins. These Peerless methods assure complete coatings, even under the beaded neck of the container.

The cutaway shows the beaded neck created by the Peerless patented process, U.S. Pat. 2856102. This is the feature that assures tight valve cup fit to prevent leakage. The Peerless Tube Company is the originator and sole licensor of this manufacturing process.



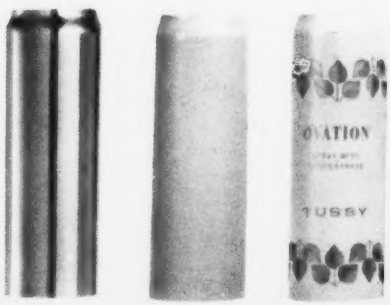
Exterior finishes

Plain Containers have no decoration. These containers are generally used when the manufacturer attaches his own paper label, or for prescription-type product packages, or when a decorated package is not required.

Coated Containers are provided in a single coating of white or attractive colors to enhance the appearance of the plain finish for general or private use or for prescription purposes.

Decorated Containers are produced in high quality one to four color lithography from your own package designs or those created by our creative staff. All colors are applied over a base coat. Simplicity of design and lithography makes the most effective sales package and most marketers are now decorating in simple, two-color designs. Original designs, special drawings and plates are billed to you at actual cost.

Peerasol containers can be coated with a highly resistant lacquer to protect the finished package against alkalies or acids at small additional cost. The latest and best enamels providing high color retention and chemical resistance are in daily use on our production lines.



Peerless Tube Company, Bloomfield, New Jersey

Printed in U.S.A.

Patent thoughts and trends

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

Recent Developments in "Cold Wave" Home Permanent and Pepsamar v. Pepto-Bismol

The protracted litigation involving Dr. McDonough's hair waving patents finally made a turn in favor of the patent owner. The U. S. Court of Appeals for the Fourth Circuit has just reversed a lower court judgment and ruled that Dr. McDonough was entitled to priority with respect to the invention covered by his patent No. 2,736,323 issued on February 28, 1956. The rival claimant was Harry Martin, a practical but untrained worker in chemistry. In making this ruling the appeal court upheld the action of the Patent Office in an interference between the parties.

It is believed important to note that the case in the Fourth Circuit did not involve the question of whether the McDonough patent was valid. The ruling simply was to the effect that McDonough was prior to Martin in making the invention defined in the claims of the patent.

The McDonough patent in question as well as parent U. S. 2,577,710, were both declared invalid by the U. S. Court of Appeals for the Second Circuit (New York) and the decisions in those cases stand unaffected by the Fourth Circuit ruling.

With regard to the Pepsamar v. Pepto-Bismol litigation, it will be recalled that a Federal District Court in New York ruled in 1958 that Sterling Drug unfairly competed with Norwich Pharmal Co., in the use of Pepsamar. It now develops that the appeal court in the Second Circuit does not agree with the lower court; and it recently ruled that Pepsamar and Pepto-Bismol are recognizably different.

Review of Twelfth year of Lanham Trademark Act of 1946

All those interested in U. S. trademarks owe a great debt to Dr. Walter J. Derenberg, Professor of Law, New York University School of Law and perhaps the outstanding scholar on the Lanham Trademark Act. Each year Dr. Derenberg reviews all the developments, including legislation and case rulings, which have any bearing on this act. His last review, as all of the others which went before, contains a lot of information which is believed to be of interest not merely to trademark lawyers but to all who are concerned in any way with the coining, use, and protection of trademarks. For this reason, very liberal use is made here of some highlights of general interest taken from Dr. Derenberg's last report.

Slogans and Combinations of Words. Advertising slogans are generally registered by the Patent Office without too much difficulty. As a result, appeals are infrequent. One such case involves the slogan "No work . . . No waste . . . Good taste . . ." for instant coffee. The Examiner had taken the position that this combination was merely descriptive of the results of using the product, but the Appeal Board of the Patent Office ruled that a certain degree of ingenuity was involved and that this was sufficient for registration on the Supplemental Register.

Another case where the same result was reached was that involving the slogan "For Young Women in White" for shoes and slippers.

On the other hand, the slogan "Out of This World" for windows for automobile trailers, was denied registration on the ground that it was a mere "puffing" statement.

Style and Model Designation. The rule is well established that letter and number combinations when used only as grade or type designations are unregistrable. In this connection the designations "17-4-PH" and "17-7-PH" used in connection with stainless steel were ruled as grade marks and unregistrable. Also, where a name sought to be registered was found to indicate a flavor of a drink rather than a trademark, registration was refused. This was done in a case involving the word "Burgundy" for use on flavoring syrup, used in the preparation of soft drinks.

Functional Features. (1) *Registrability of Conformation of Bottles and Containers.* Where a design is functional and not ornamental it is denied registration. Thus, a rhomboidal design which actually had a utilitarian function in connection with applicant's washing machinery was rejected.

In like vein, the representation of the contour of the bottle for the well-known "Tobasco" pepper sauce was refused registration, as was a picture of two bottles containing the bitters of Underberg-Albrecht.

(2) *Merely Descriptive Marks.* The applicant's marks were held both by the Examiner and on appeal to be primarily merely descriptive in the following cases: "Slim N Trim" for slenderizing and reducing service; "Camloc" as applied to clip accessories for suspension system for mounting tileform elements; "Push-Button Focusing" for cameras (held to be descriptive of a particular feature of the camera); Void Scale & Corrosion" with the letters "V," "S," and "C" prominently displayed, for a certain chemical composition to be used for scale and corrosion elimination; (it was held that the mark describes "what the goods will do when used in a particular cooling system;" the bold display of the initial letters was deemed insufficient to remove the technical defect of the mark); "Tie Fob" as used on necktie bars (applicant was held to have used the mark in plural form as a descriptive name for a particular type of necktie accessories); "Super Spun" for mineral fiber insulation; "Clean Hands" for a hand cleaner (the Board declared that the mere descriptive significance of the notation as applied to a hand cleaner was obvious and that no proof of secondary meaning had even been offered by the applicant); "Socketless" for coupling inserts for flexible conduits (term held descriptive since indicative of one of the types of push-type fittings used by the applicant); "Cushioned Open-Bottom" for cardboard trays (held unregistrable even on the Supplemental Register on the ground that the notation was merely

*Richards and Cifelli, Newark 2, New Jersey.

an informational statement regarding physical characteristics of applicant's goods and, therefore, incapable of distinguishing).

The following designations were held by both the Examiner and the appellate tribunal to be apt or common descriptive terms: "Sliding Fish Hook" as used on fish hooks; "Skalloping" for certain type shears and scissors (held to be a mere misspelling of "scalloping" and constituting merely the common descriptive name of scalloping shears); "Gregg" as used on shorthand notebooks and letterhead pads ("Gregg" held to refer to a shorthand system not indicating origin); "Radial Draw Former" for machines for stretch forming sheet metal (held to have been used as the descriptive name of machines designed to perform a certain method of metal forming); "Vinyl-Cork" for cork tile (held to be an apt identification and commercial name of applicant's product despite considerable evidence of secondary meaning submitted by the applicant; the Board emphasized that the mark sought to be registered was "such an apt name for applicant's patented article that upon the expiration of the patent, if and when others manufactured such tile, they would be entitled so to designate their goods"); "Big Burger" for double-deck hamburger sandwiches; "Minkolein" for mink oil as a base for hand cream (held to be merely a misspelled descriptive name for mink oil which had not been shown to have acquired secondary meaning; "Poly Paper" for polyethylene coated paper (held apt descriptive name since "Poly" was but a generally accepted abbreviation for "polyethylene"); "Statistical Tabulating" as a service mark for preparing punched data cards and similar services (rejected not only on the basis of descriptiveness, but on the further ground that the designation was used as part of applicant's trade name identifying the corporation rather than the service).

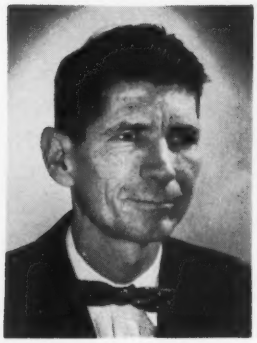
The only four cases in which a descriptive term was held registrable on appeal were these: the word "Cultured" as applied to pancake mix was allowed registration on the Principal Register, despite the fact that the term had a descriptive significance in connection with "powdered cultured milk" which, apparently, was one of the ingredients of applicant's product. According to Commissioner Leeds, the term "Cultured" as applied to the mix was suggestive rather than descriptive. The Appeal Board held, contrary to the Examiner of Trademarks, that the phrase "Extended Life" as used on metal springs for railway cars was not merely descriptive but suggestive, indicating the long-wearing quality of applicant's merchandise. The Board also came to the conclusion, contrary to the Examiner, that the word "Metalseal" for heat-sealable packaging laminates of foil, paper stock and adhesive, was registrable as being merely suggestive of "sealing out moisture." Most recently, the phrase "Food Fresh" for an ascorbic acid preparation to be used in preserving the color and flavor of fruit was permitted registration on the ground that this term had only suggestive significance and should not have been held "merely descriptive" by the Examiner of Trademarks.

Registration in the Name of a U. S. Distributor or Assignee. This question is very important to certain segments of the drug and cosmetic industries and is currently the most controversial problem in the realm of trademark law. The Patent Office, according to Dr. Derenberg, continues to look with a suspicious eye upon registrations standing in the names of such persons and will reject applications in the name of persons who according to the record are "mere distributors" or "mere importers." Indeed, in the case where an importer registered "Porcelaine de Paris" for chinaware and crockery, the Patent Office cancelled the registration on petition of the French manufacturer whose trademark had been registered in the U. S. without the petitioner's knowledge or approval.

Cases Where No Confusion was Held Likely to Exist Between the Marks. As is generally known, where the Patent Office publishes a mark of an applicant, anyone who feels he would be damaged by the registration of the mark may oppose its registration. The Patent Office then rules whether there is likelihood of confusion or not. The cases in this section were those in which the rulings were as indicated in the heading.

"Blue Crest" with a shield having the letters "BC" thereon, topped by a coronet for vitamin preparations, and the registered mark "Blue Cross" above a representation of a cross, for mineral oils and similar proprietary products, "Trylan" for yarns and "Trulon" for window curtains and curtain fabrics in the piece; "Durated Lighting" for electric lamps and "Duro Test" or "Durex" for incandescent and fluorescent lamps; "Lazy-Time Togs" for misses' and children's dusters, housecoats, coveralls and robes, and "Happy Time" for misses' and children's loungewear; "Prom Plaid" for dinner jackets and "Prom" for collars; Therm-O-Lite" for combination aluminum storm windows and storm doors and "Thermo-Pane" for multiple glass sheet glazing units; "Today's Fresh" for fresh vegetables and "Today's" for canned vegetables and fruits; "Lilli-Dell" for ladies' hosiery and "Lilli Ann" or "Lilli Annette" for suits, coats and dresses; "Coloral" for hair colorings and "Clairol" for hair dyes and lotions; "Diamond" for religious candles and "Diamond" for matches, tooth picks, clothespins, etc.; "Ancor" for floor surfacing plates and "Ancor 80" for iron powder; "Peggy Newton" for cosmetics and Peggy Sage" for manicure preparations; "Stride Well for children's shoes and "Stride Rite" for shoes; "Next Week" for a newspaper's weekly supplement and "News-Week" for a weekly magazine; "Wall-Spread" for paint and "Speed-Wall" for the same product; "Royal Palm" for men's sports shirts and slacks and "Palm Beach" for piece goods; "Sealdsweet" for candy and the same word for citrus fruits and canned citrus fruits; "Taste Treats" for candy and "Chocolate Treats" for the same goods; "Frig-Tropic" for lubricating oils and greases and "Trop-Artic" for motor oils; "Keen-Edge" for knife sharpeners and "Keeneredge" for garden implements including pocket cutlery; "Juliette" for ladies' electric razors and "Gillette" for razors, blades and electric shavers; "Heli-Carb" for drills, reamers and cutting tools and "Helicoil" for spark plug bushings and apparatus used for screw connections, etc.; "Cransweets" for preserved cranberries and "Cran" or "Captain Cran" for cranberry juice;

(*Continued on page 266*)



From left to right: John R. Miller, promoted to eastern sales manager of Florasynth Laboratories, Inc.; Bruce Ainsworth, president of the Harchem Division, Wallace & Tiernan Inc.; Dr. Marshall I. Hewitt, director of clinical research, domestic, E. R. Squibb & Sons; and Charles F. Lenhard, formerly plant manager, Chicago plastic bottle plant, Continental Can Company, now manager of its new Plastic Bottle and Tube Division.

NEWS . . .

Appointments and Promotions

John R. Miller, formerly a flavor specialist with the midwest sales office of **Florasynth Laboratories, Inc.,** has been promoted to the position of eastern sales manager, assuming many of the responsibilities undertaken by the late Arch Payne. Mr. Miller has been with firm since 1956.

Bruce Ainsworth, formerly assistant to Charles H. Rybolt, vice-president in charge of Chemical Division for **Wallace & Tiernan Inc.,** has been appointed president of the company's **Harchem Division.**

New director of clinical research, domestic, for **E. R. Squibb & Sons** is Dr. Marshall I. Hewitt, who joined the company in 1954 as an associate medical director. He has been handling clinical investigations in neuropsychiatry, nutrition, and geriatrics. Changes announced at the **Squibb Institute for Medical Research** are: Dr. R. C. Merrill, formerly director of clinical research in the Medical Division, now associate director of the Research and Development Laboratories, in charge of biological research; Dr. Allen Cohen, who has joined the section of analytical and physical chemistry as a senior research chemist; Dr. Stanley Rudoff, who has joined the chemical development section; and Dr. Gerald Krakower, who has joined the section of organic chemistry.

Charles F. Lenhard is manager of the new **Plastic Bottle and Tube Division of Continental Can Company,** with headquarters in Chicago. The former manager of the firm's Chicago plastic bottle plant, he is in charge of sales, production, and research and development in this field. P. N. Smith, a metal can sales representative in Cleveland, has been named as assistant products sales manager in the nonfood can group of the company. His line includes all aerosol products, and his headquarters are in the New York office.

Dr. Emanuel Grunberg has been appointed head of the department of chemotherapy of **Hoffmann-La Roche Inc.,** succeeding Dr. Robert J. Schnitzer, who has retired but is continuing as consultant. Dr. Grunberg joined Hoffmann-La Roche in 1946 as a senior bacteriologist, after some years in mycology with various hospitals, and became associate director of chemotherapy in 1959. He is also chief of the Division of Mycology, Department of Dermatology, Newark Department of Health. Raymond D. McMurray has been elected secretary of the company, succeeding Hans H. A. Meyn, who has served in that post for nearly 40 years. Samuel L. Welt has been appointed patent counsel, and Maurice W. Levy, trade counsel, a newly created post.

John Major has been named quality control manager for the **Toilet Articles Division of Colgate-Palmolive Company,** succeeding A. Kenneth Tosh, who has been appointed quality control manager for the Household Products Division. Mr. Tosh, with the firm for 28 years, has held many technical posts in that time. Mr. Major joined the company in 1951 as a senior project chemical engineer in the research and development department.

George W. Orr, Jr., has been elected chief executive officer of **Ames Company, Inc.** He continues as president of Ames, and as a member of the board of directors. Mr. Orr began with the company in 1951 as vice-president in charge of sales, was advanced to executive vice-president in 1953, and was elected president in 1956. He is also president and a director of **Ames Company of Canada, Ltd.,** vice-president of **Miles Laboratories, Inc.,** the parent firm, and of **Miles Laboratories, Ltd., Toronto.**

A. H. Wirz, Inc., has appointed Henry W. Cox sales supervisor, a position newly created to take care of the firm's expanding operations in packaging manufacture. He will serve as a liaison between sales and production divisions, for all products.

Norman Gordon, formerly with Polak & Schwartz, has been appointed to the sales staff of the **Onyx Oil & Chemical Company.** With headquarters in Chicago, Mr. Gordon will cover Missouri, Kentucky, Kansas, Arkansas, and Oklahoma.

Chanel, Inc., has named Joseph E. Hedges area sales representative of a newly formed territory, which includes Kentucky, North Carolina, eastern Tennessee, Virginia, and West Virginia. Mr. Hedges was formerly with Helena Rubinstein, Inc., in the southeast.

James D. McNitt has been appointed executive vice-president of **Bristol Laboratories, Division of Bristol-Myers Company.** With Bristol since 1944, Mr. McNitt began as director of chemical engineering, and has served in several executive capacities, since 1949 as vice-president in charge of manufacturing.

From left to right: Clarke C. Hambley, vice-president in charge of advertising and promotion, and now also responsible for the complete marketing of Aziza, and Frank L. Stamberg, general sales manager, both for Prince Matchabelli, Inc.; Dr. Frank L. Cohen, elected to the new post of vice-president for operations of the Chemical Division, Merck & Co., Inc., Hans T. Madsen, soap boiler, the Duveen Soap Corporation.

Prince Matchabelli, Inc., which has just taken over **Aziza Eye Cosmetics,** has given Clarke C. Hambley, vice-president in charge of advertising and promotion, the added responsibility for the complete marketing of Aziza, including packaging, promotion, advertising, and selling. Frank L. Stamberg has been appointed general sales manager for Prince Matchabelli, Inc. and Gerry Presson, northeast regional sales manager. Four new field sales representatives in the west have been named: Don Cornell, to cover Washington and Oregon; James Brown, Los Angeles County; Herman Dietzsch, southern California; and James Davidson, eastern Montana, Idaho, Wyoming, the western part of the Dakotas, and Nebraska.

Dr. Frank L. Cohen has been elected to the newly created post of vice-president for operations of the **Chemical Division, Merck & Co., Inc.** He was formerly director of production, and has been with Merck since 1932. In that same division, Eric R. Braun has become director of development, a new position, and A. H. Mattson has become assistant to the president of the division. Mr. Braun has been with Merck since 1937, serving as director of operational services since 1956, and Mr. Mattson, controller of the division since 1956, has been associated with the firm since 1934. Dr. Herbert E. Silcox, who joined Merck in 1942 as a chemical engineer, has been named director of production. He has served as technical director of the division since 1956. Bert L. Hill has been appointed manager of market planning, and John E. Lyons, marketing operations manager, of the **Merck Sharp & Dohme Division.** Mr. Hill joined the division in 1940 as a sales representative, being appointed product manager in 1957. Mr. Lyons began with Merck in 1950 in the research laboratories. In 1958 he was appointed product manager of the division. Dr. Marvin J. Chertkoff, manager of the technical unit in the quality control area of the division, has been assigned to the marketing section for an indefinite period. He will be succeeded by Dr. Martin H. Yunker, manager of granulating.

Hans T. Madsen has been appointed soap boiler by the **Duveen Soap Corporation.** Mr. Madsen, who recently arrived from Denmark, was previously with a/s Blumoller of Copenhagen. He is replacing Fred Wolf, who is retiring after more than 20 years of service.

A. H. Robins Company has made two promotions in the manufacturing division: Dwight W. Archinal from assistant superintendent of manufacturing to superintendent of manufacturing, and Garnett W. Vaughan from superintendent of manufacturing to director of the division. John E. Norton, vice-president in charge of European operations, has been appointed director of international operations.

Cecil C. (Chick) Popkin has joined **Tussy Cosmetics, Division of Lehn & Fink Products Corporation,** as assistant field sales manager. Mr. Popkin was formerly sales manager of Park & Tilford Toiletries, in charge of drug, chain, and department store sales.

Dr. Peter B. Russell has been named director of research of **Wyeth Laboratories.** He has been with the company for several years, most recently as manager of the organic development laboratory section.

From left to right: Dwight W. Archinal, superintendent of manufacturing, and Garnett W. Vaughan, director of the manufacturing division, both of the A. H. Robins Company; Cecil C. Popkin, now with Tussy Division, Lehn & Fink Products Corporation, as assistant field sales manager; and Dr. Peter B. Russell, who is director of research for Wyeth Laboratories, for microbiology, chemistry, and pharmacology research.

From left to right: John Edward Grimm III, a vice-president of Sterling Drug Inc., who is now also director of marketing of the Glenbrook Laboratories Division, and Seaton Gales, now a divisional vice-president

and administrative assistant to the president; Heinz J. Eiermann, new director of research, International Division, Shulton, Inc., and Robert M. Goldemberg, director of Shulton's toiletries research, domestic market.

Sterling Drug Inc. has appointed John Edward Grimm III, a vice-president of the company, as director of marketing of the company's **Glenbrook Laboratories Division.** He has been in charge of Glenbrook's sales. Seaton Gales, who has been administrative assistant to the executive vice-president of Glenbrook Laboratories, has been named a divisional vice-president and administrative assistant to the president. Mr. Grimm joined Sterling in 1957 as a divisional vice-president, and Mr. Gales joined the firm in 1954 as assistant manager of chain store sales. Robert L. Longyear, Jr., a production manager in Mexico since 1947, has been named a divisional vice-president of **The Sydney Ross Company** and **Winthrop Products, Inc.,** subsidiaries of Sterling.

Shulton, Inc., has formed two new toiletries research laboratories, and has appointed Robert M. Goldemberg director of toiletries research for the domestic market, and Heinz J. Eiermann as director of research, International Division. Before joining Shulton in 1958 as project leader, Mr. Goldemberg was a senior chemist with Coty. Mr. Eiermann, began with Shulton in 1954, and became associate director of toiletries research in 1959.

Joseph J. Tumpeer has been elected senior vice-president and special advisor to the president of **Witco Chemical Company, Inc.** Mr. Tumpeer joined Witco in 1921, becoming vice-president in charge of asphalt sales and manufacture in 1952. A. M. Eggeman, assistant director of purchases, has been promoted to director of purchases, succeeding Michael D. MacBurney, who has become general manager of the **Pioneer Products Division.** In the **Organic Chemicals Division,** three changes have been made: Harold B. Seligman, from financial and administrative vice-president, to vice-president and general manager; Jerome Harrison, formerly vice-president, midwestern sales, to vice-president and director of marketing; and Stanley D. Shaw, formerly Mr. Harrison's assistant, to midwestern sales manager.

Robert M. Boyd, Jr., has been appointed sales representative for **Ansbacher-Siegle Corporation Division of Sun Chemical Corporation,** for the Philadelphia, Baltimore, Washington, and Richmond, Va., areas.

William H. Rorer, Inc., has appointed John A. Fiedler production manager. He began as tablet department manager in 1953, and was made assistant plant manager in 1956.

Edward J. Nawoj has been named vice-president, manufacturing, and James B. Ammon director of marketing by **Baxter Laboratories, Inc.** Mr. Nawoj, formerly director of manufacturing, began with Baxter 22 years ago and has served as chief chemist, general superintendent, and manager of production. Mr. Ammon was formerly assistant to the president. A C. Dalton, who joined Baxter ten years ago, has been named manager of sales services. He was office manager of the Cleveland, Miss., plant.

Ernest C. Grob has been appointed to the newly created position of assistant to the vice-president in charge of marketing at **Ciba Pharmaceutical Products Inc.** Born in Switzerland, Mr. Grob joined Ciba there, coming to this country in 1949 to hold various positions in financial control. He was most recently manager of Ciba States Export Corp., and manager and vice-president, Supramar Chemicals, Inc., a subsidiary.

The **Houbigant Sales Corporation** has announced three appointments: H. T. (Bert) Georgi, vice-president in charge of the Cheramy and chain store division; Ralph Lewis, vice-president and sales manager, also retaining his present position as president of Jaquet; and Al Welzel, field sales manager.

Century Chemical Corporation has appointed Werner Samter vice-president of production and research for its recently acquired subsidiary, **Chemo Puro Manufacturing Corporation,** manufacturers of fine chemicals, animal feed supplements, and food additives. Mr. Samter was formerly plant manager.

The Dow Chemical Company has promoted Dr. L. H. Horsley to research scientist and Dr. Henry Tolkmith to associate scientist. Both are on the staff of the Edgar C. Britton research laboratory. Dr. Horsley, who joined Dow in 1936 as a chemist, became superintendent of the Texas Division styrene laboratory in 1943, and in 1945 returned to Midland as group leader in the organic laboratory. Dr. Tolkmith went to Dow from I. G. Farbenindustrie in Germany, and has been the inventor and coinventor in connection with 57 patents since he joined Dow in 1948. The two ranks require a notable record of accomplishment in research and devotion to high professional standards in science.

Herman Goldenberg, a supervisor of sales for the central area of **Beauty Products Ltd.,** distributors of Noreen hair rinses, has been appointed to the newly created position of field sales manager.

HAARMANN & REIMER

SPECIALTIES

AGRUMEN ALDEHYDE

Refines the fresh green note. Adds a fresh and piquant note to Eau de Cologne and Citrus type perfumes. Also useful as top note in Pine odors.

INDOFLOR H & R

The Indole note without discoloration, for use in cosmetics and soaps.

MUGOFLOR

Of true Muguet quality. It is a marvellous blending agent. Tenacious, intense, yet of fine floral character. Non-discoloring.

LILAC 9830 W. O. J.

For many years a world renowned Lilac, very true to nature. Outstanding base for creams, perfumes, and lotions.

NEROFLOR

Flowery with a pronounced odor of Neroli Oil and Orange Blossom with an interesting animal under-note. Non-discoloring and an excellent fixative.

Write for our complete list of specialties and other aromatic chemicals.

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REGISTERED TRADEMARK

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A DIVISION OF VERONA-PHARMA CHEMICAL CORP.

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Branch Office:

From left to right: James W. Bradley, now president of Smith-Dorsey Pharmaceuticals; Kenneth J. Dumas, M.D., director of clinical research, Chas. Pfizer & Co., Inc.; David X. Klein, vice-president, the Heyden

Chemical Division, Heyden Newport Chemical Corp.; Pierre Parchois, vice-president, Synarome Corporation of America, in charge of sales in the U. S. and liaison between American customers and Synarome-Paris.

James W. Bradley, former director of sales and promotion, J. B. Roerig & Company, has been named president of **Smith-Dorsey Pharmaceuticals.**

Kenneth J. Dumas, M.D., has become director of clinical research of **Chas. Pfizer & Co., Inc.** Dr. Dumas has served as associate director of clinical research since 1955. Anton G. Kettel has been named operations manager and John L. Watters, M.D., medical director, of **J. B. Roerig and Company,** pharmaceutical division. After joining Pfizer in 1951, Mr. Kettel served in several capacities, most recently in the Pfizer Laboratories. Dr. Watters, who joined the firm in 1959 as coordinator in the new products coordination department, has served as associate medical director of the Laboratories since last June.

David X. Klein, technical director of **Heyden Chemical Division, Heyden Neport Chemical Corporation,** has been appointed a divisional vice-president. He was formerly manager of research at the firm's Garfield, N. J., plant.

The Synarome Corporation of America and Synarome, SARL-Paris, have announced appointment of Pierre Parchois as vice-president. He will be in charge of sales in the United States and, as technical advisor, will maintain liaison between American consumers and Synarome-Paris. Mr. Parchois, a perfumer, was formerly with Coty, Inc., has served in the fine chemicals department of E. I. duPont de Nemours, and has a background in the essential oil industry of Grasse.

Robert W. Johnson, Jr., has been named executive vice-president and general manager of **Johnson & Johnson.** He has been executive vice-president of marketing since 1955 and became a member of the executive committee of the board of directors a year before that. **Johnson & Johnson International** has chosen Clark H. Johnson, a director of distribution and of the foreign sales division of McNeil Laboratories—an affiliated company, as vice-president, pharmaceuticals, and a director.

Schering Corporation has named Harold N. Torkelson general sales manager, to supervise domestic sales and advertising of the marketing division. With Schering since 1949, Mr. Torkelson was most recently domestic sales manager. Joseph J. Ingolia, central regional manager, is now administrative assistant to the vice-president for marketing, succeeding Donald T. Rush, who has become market planning manager. Paul J. Micali has been appointed director of advertising and promotion. He had been advertising manager. Other marketing appointments include: Katharine H. Hain, M.D., director of medical services; Joseph I. Lisaius, field and trade promotion manager; William G. O'Brien, advertising manager; Robert B. Beusse, assistant to the director of advertising and promotion; Edward Thieme, marketing operations manager; Bernard I. Sherman, audiovisual manager; Melvin W. Kerner, promotion aids manager; and Robert L. Klein, product manager.

Dr. John Controulis, assistant director of product development since 1949, has been named manager of the market development division of **Parke, Davis & Company.** The newly created market development department is part of the Commercial Development Division.

Paul Cardinal Chosen

Paul J. Cardinal, vice-president in charge of industrial relations and assistant secretary of Hoffmann-La Roche Inc., has been elected treasurer of The National Vitamin Foundation, Inc., to succeed J. David Hayden, who has resigned. A member of the board of governors of the Foundation, Mr. Cardinal also continues as vice-president.

Robert Felton in England

Robert E. Felton, vice-president of Felton Chemical Company, Inc., is visiting Felton Company (Great Britain) Ltd., traveling with Ray Stansfield, director of the British firm, after which he will visit the Felton Company in France.

T. Miserendino Resigns

T. Miserendino has announced his resignation as vice-president of Perfumery Associates, Inc., where he was a perfumer. He can be reached at No. 27 Cottage Place, Riverdale, N. J.; phone, TEmple 5-2684.

Wiselogle Elected by N. Y. Academy of Sciences

Frederick Y. Wiselogle, D.Sc., associate director in charge of chemical research, Squibb Institute for Medical Research, has been elected president-elect for 1960 of the New York Academy of Sciences, to serve as president in 1961.

Two Celebrate 25 Years at Baxter

Henry E. Metz and Joseph E. Rau are the first employees to observe 25 years of service at Baxter Laboratories, Inc. Mr. Metz, now assistant to the director of manufacturing, and Mr. Rau, treasurer and controller, were among the first 20 employees of the company.

F. Luckett Elected

The new president of The Chicago Drug & Chemical Association, Inc., is Forrest M. Luckett of Monsanto Chemical Company.

FORREST M. LUCKETT

The other new officers are Samuel A. Davis, C. P. Hall Company, first vice-president; Robert DeLamar, J. H. DeLamar & Son, Inc., second vice-president; J. C. Browning, DeMert & Dougherty, Inc., secretary; and Ebon C. Jones, Owens-Illinois, treasurer.

Gaffney Company Appointed

Cerographic, Inc., has appointed M. D. Gaffney Company, 4710 Crenshaw Blvd., Los Angeles 43, as its West Coast representatives.

A. de Laire in U.S.A.

Antoine de Laire, who is in charge of sales for Fabrique de Laire of France and consultant for de Laire, Inc. of New York, is visiting his customers and friends in the United States and Canada.

His father, Francois de Laire, director general of Fabrique de Laire, is to join him after expansion of the French plant is completed.

R. E. Horsey, vice-president in charge of sales for Givaudan-Delawanna, Inc., who spoke in honor of Dr. William S. Gump at the annual meeting of the Society of Cosmetic Chemists, and whom we identified in our January issue, as S. F. Coneybear, outgoing president.

Century Acquires Chemo Puro

The Century Chemical Corporation has acquired Chemo Puro Mfg. Corp., Oil & Chemical Terminals, Inc., and the Asphalt Division of Oil & Chemical Products, Inc., all of Newark, N. J., and Chemo Puro AG, a European sales organization with headquarters in Zurich, Switzerland, and offices in Amsterdam, Holland; Hamburg, Germany; and Florence, Italy.

The company owns 100 per cent interest in each, except for Chemo Puro AG, in which Century owns 92 per cent interest. Operations are to be integrated with Century's.

Ciba Director Joins CED Finance Committee

Lawrence H. Zahn, director of the purchasing and package development division of Ciba Pharmaceutical Products Inc., has been selected to represent the pharmaceutical industry as a member of the Committee for Economic Development, Industry Finance Committee.

LAWRENCE H. ZAHN

Essential Oil Association Elects R. Horsey President

At its recent meeting, the Essential Oil Association elected officers for 1960. R. E. Horsey of Givaudan-Delawanna, Inc., was elected president; E. Langenau, Fritzsche Bros., first vice-president; F. F. Dittrich, Ungerer & Co., second vice-president; E. Manheimer, J. Manheimer, secretary-treasurer.

Elected to the executive committee were: P. J. Coutin, Coutin Associates; V. G. Fourman, Syntomatic Corp.; F. K. Goudsmit, van Ameringen-Haebler Division, International Flavors & Fragrances, Inc.; B. Polak, Polak's Frutal Works; and Mr. Keller.

Florence E. Wall, cosmetics consultant and author, receiving honorary membership in the American Institute of Chemists from Dr. Wayne E. Kuhn (left), Texaco Inc., president. Prof. E. J. Durham, N. Y. University, looks on.

Florence Wall Honored

The American Institute of Chemists, New York Chapter, presented an honorary membership to Florence E. Wall, cosmetics consultant and author, during its most recent meeting in New York City. Dr. Wayne E. Kuhn of Texaco Inc. and president of the Institute, presented Miss Wall with the citation, which reads: "In recognition of active devotion throughout the life of the Institute. The ways in which she fostered it in its early years and continued to serve it later are innumerable. The Institute takes pride in the first honorary membership to be conferred on a woman chemist."

Armour-Erba Formed in Milan

Formation of Armour-Erba Farmaceutici, S.p.A., in Milan, Italy, to produce and sell pharmaceuticals in Italy and the Near East, has been announced by R. A. Hardt, president, Armour Pharmaceutical Company, Chicago.

President of the new company is Count Edourdo de Visconti, who heads Carlo Erba, Italian chemical and pharmaceutical house. Directors are Mr. Hardt; E. J. McAdams, financial vice-president, secretary and treasurer of Armour; and J. A. Gibernau, international director of Armour. The marketing organization is under Dr. Aldo D'Anna.

Alcolac Selects M. H. Baker Co.

Carl Pacifico, vice-president, American Alcolac Corporation, has announced that the M. H. Baker Company will be distributor for Alcolac's surfactant line in Minnesota, Wisconsin, the eastern Dakotas, and northern Iowa.

Huisking's 50th Anniversary

The changes in the character of the firm of Chas. L. Huisking & Co. over the 50 years of its existence were noted as the company celebrated its 50th anniversary last month. It dates back to January 1, 1910, when Charles L. Huisking, then 25 years old, became the youngest drug broker in the industry, following an apprenticeship which began when he was 13. Mr. Huisking is still active as chairman of the board of the company.

The Huisking enterprise grew rapidly, and during World War I was extremely active in the delivery to manufacturers here and abroad of essential materials in short supply. This activity continued after World War I. In the late twenties, the drug and chemical business in this country had become stabilized, and the brokerage business largely disappeared. Huisking then became a distrubitor and an agent for manufacturers. The company became the only U. S. manufacturer of santonin, an important vermifuge used in products for the poultry and animal industries, as well as by the Armed Forces overseas. Russia had been the only source of this drug, but Huisking developed an Artemisia (wormseed) plantation, and extracted santonin from it. Huisking obtained one of the two distributorships for duPont camphor, also exclusive representation of Italy's Conti Castile Soap and other soap specialties. The company was also a major distributor of Norwegian cod liver oil, and in 1935 Mr. Huisking was knighted by the King of Norway with the "Order of Saint Olav, First Class."

From broker, agent, and distributor (as well as maker of santonin and blender of cod liver oil and other vitamin oils), in the fifties Huisking management decided to expand into manufacturing. In 1955, the company formed a subsidiary, Clintbrook Chemical Co., Inc., expanded in 1956 and 1957 to its present facilities in Lyndhurst, N. J., by purchase of the Wm. S. Gray plant and the continuance of operations formerly carried on by that company. Here, in 1958, production of procaine and its salts, plus para amino benzoic acid and its salts, as well as other fine chemicals formerly produced at the Brooklyn plant, was begun.

In 1958, Huisking acquired the assets of Glyco Products Co. (specialty chemicals for food, plastics, paper, electronics, metals, paints, and textile industries) which acquisition changed the nature of Huisking's operations principally to one of manufacture. Peter Devold Oil Company became a Huisking division in 1946, and together with Glyco and Clintbrook, was consolidated into Chas. L. Huisking & Co., Inc., at the end of 1958.

William W. Huisking (left), president, Chas. L. Huisking & Co., Inc., presenting an award plaque to his father, Charles L. Huisking, the founder of the firm, which celebrated its fiftieth anniversary on January 1, 1960.

Birthplace of Chas. L. Huisking & Co., Inc., 5 Platt Street, New York City. Since then, the firm has moved from drug brokerage, distribution of drugs, chemicals, essential oils, to production of drug and specialty chemicals.

Chas. L. Huisking & Co., Inc., is operated by the founder's three sons: William W. Huisking, president; Edward P. Huisking, vice-president in charge of operations at the Lyndhurst plant; and Richard V. Huisking, secretary. Other officers are Dr. Eugene McCauliff, vice-president of the parent organization and president of Glyco Chemicals Division; M. S. Green, vice-president and treasurer; and K. A. Koehler, vice-president.

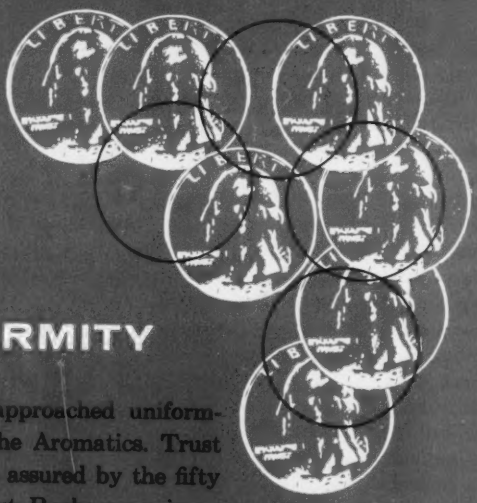
After being one of two distributors of duPont synthetic camphor since its introduction in 1936, Huisking purchased from duPont the equipment for tableting camphor in 1954 and took over its function. Early in 1959, Huisking acquired from duPont its processes for camphor production, both technical and U.S.P. grades, and will soon be the major producer of camphor in the U. S.

In addition to camphor production, in 1960 there will be production of sorbitan fatty acid esters as well as polyoxyethylene sorbitan fatty acid esters. Further, it is expected that the Glyco Chemicals Division will take over from duPont the production of dimethylol urea, according to William W. Huisking.

In attendance at the annual sales meeting of Polak's Frutal Works, Inc., held at the Middletown, N. Y., plant, left to right: standing, E. Johnson, D. Moncino, P. Delaney, L. Pais, E. Sturman, J. Donnelly, K. Freiberg, A. Krol, A. J. de Jong, Dr. J. S. Jellinek, M. Preiser, F. Marshall, H. Lonergan, E. Buday, J. Melody; and seated, E. Vles, Dr. R. Boucher, A. H. Micheels, E. Polak, W. R. Lloyd, B. Polak, president of the firm, J. Meihuizen, J. ter Veer, L. Kirsh, and H. Roger.

International Wax Selected

The Continental Oil Company has appointed the International Wax Refining Company, 99 East Hawthorne Ave., Valley Stream, N. Y., as its white oil and petrolatum sales agents for Brooklyn, Queens, and Long Island. Arthur Glacel is now associated with International Wax.



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Becco Builds Distributing Center

Construction began in January in Lyndhurst, New Jersey, on a new distributing center for the Becco Chemical Division of Food Machinery and Chemical Corporation of Buffalo, New York. Completion is scheduled for May of this year. The new center will replace Becco's present center in Jersey City, providing larger and more efficient storage, and more convenient transportation facilities.

Matthew A. Noonan, district manager in New York City, will direct the distributing operations. Anthony Wieand, distributing supervisor at Becco's present Jersey City center, will continue in that position.

Wyeth Expands in S.A.

A large addition to the Quilmes, Argentina, plant of John Wyeth Laboratories, S.A., has been announced. It will add upwards of 50 employees to the more than 400 persons now engaged in the operation.

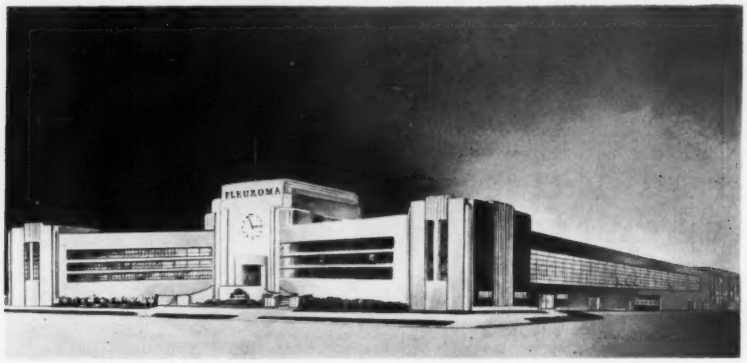
The annex is part of a world-wide building program, which has also seen a production laboratory in South Africa completed this fall.

Fleuroma Expands

Fleuroma, Inc., has purchased the land and building at 43-23 Dreyer Avenue, Long Island City 1, N. Y., for the company's main plant and central administrative offices. Incorporated in the 90,000 square feet of space will be an extensive perfume laboratory. The firm expects to move into the new quarters late this spring.

Within the last 16 months, Fleuroma has also established international plants and facilities at Sao Paulo, Brazil, and at London and Paris, as well as a midwestern sales office in Chicago, Ill.

Design for newly purchased building of Fleuroma, Inc., 43-23 Dreyer Ave., Long Island City.



Shulton Fine Chemicals Names Voss Company

The Fine Chemicals Division of Shulton, Inc., has named The Voss Company of Los Angeles, California, as sales representatives for the West Coast. Voss will be the exclusive sales agents in California, Oregon, Washington, Nevada, Idaho, Montana, Wyoming, Utah, Colorado, New Mexico, and Arizona.

James Hill, Jr.

James Hill, Jr., chairman of the board and chief executive officer of Sterling Drug Company, died suddenly on January 27, in Paris, France, where he had arrived on business. He was 62 years old.

Mr. Hill began his career with the U. S. Treasury Department Income Tax Unit in 1922. In 1929 he joined Sterling as a tax accountant, thereafter becoming comptroller and treasurer. In 1941 he was elected president and in 1949 he became chairman of the board as well. Six years later Mr. Hill relinquished the presidency, continuing as chairman and chief executive officer.

He was also a member of the board of directors of Irving Trust Company. He was a past president of the Proprietary Association of America, past chairman of the executive committee, Brand Names Foundation, a director of the Commerce and Industry Association of New York, and chairman of the New York World Trade Week Committee.

Harold D. Pomeroy

Harold D. Pomeroy, president of G. S. Stoddard & Company, Inc., died January 17 at the age of 67.

Mr. Pomeroy joined Stoddard in 1920, and became its president and chief executive officer in 1939.

W. Wallace Roff

W. Wallace Roff, vice-president and director of Whittaker, Clark & Daniels, Inc., died suddenly on January 16 of a heart attack. He was 57.

W. WALLACE ROFF

Mr. Roff began with Whittaker 42 years ago as an office boy, and since then he has served as sales representative, sales manager, and vice-president of the firm.

Kendall Dyer Doble

Kendall Dyer Doble, president of Pneumatic Scale Corp., Ltd., of Quincy, Mass., died January 14th in London, England, of a heart attack, while on a business trip.

Mr. Doble had been president of Pneumatic Scale since 1947, when he succeeded his father, the late William H. Doble, who founded the firm in 1895. He joined the firm in 1919, becoming manager of the sales office in England two years later. After his return to Quincy in 1926, he became treasurer, and was elected a director in 1929. He served as vice-president and general manager for 15 years before becoming president.

Besides his wife, he is survived by two daughters and his son, Kendall D. Doble, Jr., who is executive vice-president of the company.

George W. Perkins

George W. Perkins, a director of Merck & Company, Inc., died at his home in New York City on January 10, at 64 years of age.

Mr. Perkins served Merck as treasurer, executive vice-president, and director from 1927 to 1948, when he entered the service of the Government, first with the E.C.A. Industry Division, then Assistant Secretary of State for Europan Affairs, and Permanent Representative with NATO, with the rank of Ambassador. He had rejoined Merck in 1957.

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SALES REPRESENTATIVES

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Management Forum

BY FRANCIS CHILSON
INDUSTRIAL CONSULTANT

Roll Labeling

To obviate the danger of mis-labeling, many of the firms in the trade are adopting roll labeling, and standard equipment for applying roll labels can be purchased. The virtue of rolled labels is that there can be no mix-ups in the print shop as there can be when labels are printed on sheets and subsequently cut up by one means or another. In order to save a few pennies many firms still follow the practice of having several different labels printed on the same sheet. This is done particularly when a variety of small-run labels are required. Obviously the practice is dangerous when all the labels on the same sheet are identical in size. There is less danger of course when there is a considerable difference in the size of labels printed on the same sheet.

The use of roll labels of course inflates the label inventory considerably because each individual label requires a complete roll. But rolls can be obtained in various sizes or counts, hence, inventories and wastage are to some extent controlled. As is obvious, roll labels must be cut off and coded at the moment the labels are applied to containers. The only possibility of error lies in the failure of the labeling machine operator to change the code number and the label roll when successive runs of different products using the same size labels are run through the same machine.

Every packaging superintendent likes to minimize machinery set-ups and change-overs by running as many different products as he can through the same set-up. This is excellent practice when extreme precautions are taken to assure that the preceding lot is cleaned up completely before its successor starts coming down the line. The problem is simple when different products run on the same line are of different colors. But research and development men seem to like any color, especially for liquids, provided it is dark brown or black! R&D men usually stop thinking about manufacturing problems once a batch is successfully made in bulk. Another precaution that should always be taken when more than one product is packaged in identical containers with the same size labels, and that is, no two dangerous products should ever succeed each other on the same line. It is safer to follow a dangerous product with an innocuous one. When two products are exceptionally dangerous they should not be run through the same line on the same day.

Although mix-ups, thank Heaven, are infrequent in the pharmaceutical industry, and when they do occur are seldom disastrous, we operators are bound nevertheless legally and morally to go to extremes in preventing mix-ups of any kind. To prevent mix-ups and at the same time to eliminate inventories of labels, I conceived the idea years ago of photographing the label and the code number directly on the container. In this column I described a machine comprising a labyrinth intake; a sensitizing chamber where the containers would be sprayed with sensitizing solution; an exposure chamber where light through a master film would project the coded label on the sensitized container; a fixing chamber, and finally a washing and drying labyrinth on the discharge section of the machine. Such a machine had never been developed. But one of the big firms in the trade decided to do something about it and, in cooperation with Kodak, launched a project which succeeded to the point where glass containers labeled by photography had been produced. Then an economy wave in the initiating firm aborted the whole thing. This project was initiated before the war. I commend it to the glass container companies because I think the idea is practical.

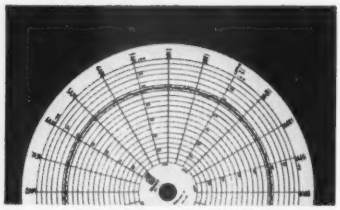
Container printing is another means of applying multi-color, coded labels directly on containers. This is done of course with metal, paper and plastic containers, but has never been successfully done with filled glass containers because the inks used in glass printing have to be baked at relatively high temperatures before they will set permanently. Consequently

WEATHER WATCHER AT WORK

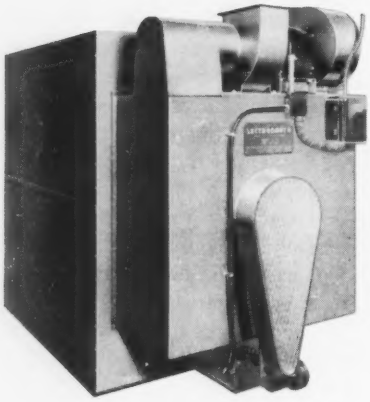
How the weather watcher lost his job

HE KEPT AN EYE on the humidity—said when it would be safe to run and when to shut down. Operations were pretty sketchy during humid summer days, until they discovered that a Lectrodryer makes them independent of the weather. Now they work every day, regardless of the humidity.

Their dewpoint recorder now shows constant DRYness



This is a true story—happened in a candy factory in Chicago. But it's one that's been repeated hundreds of times all over the world—in every type of plant where unwanted moisture is present in air, gases or organic liquids.



Air-drying Lectrodryer

If you're tired of seeing high humidity gum up your production, send for the booklet *Because Moisture Isn't Pink.* It tells how other weather watchers solved their moisture problems. Write Pittsburgh Lectrodryer Division, McGraw-Edison Company, 309 32nd Street, Pittsburgh 30, Pennsylvania.

Lectrodryer*

*REGISTERED TRADEMARK U. S. PAT. OFF.

McGRAW EDISON

the printing of glass containers has been limited to milk and soda pop bottles and similar large-run items. But I think that adequate research would result in the development of inks that would etch glass and require only momentary air drying. What about printing a plastic film of suitable color on the containers and subsequently over-printing the label and code on the film? Plastic films take printing readily.

The pharmaceutical industry is now big enough to undertake some fundamental engineering research and development which it couldn't have afforded before the war. It is also big enough to make demands upon its suppliers for the solution of problems like the one discussed here.

I shall leave the subject now with another thought: the electronics industry might be investigated for solutions to our labeling, coding and other problems. For example the electronics industry developed magnetic ink during the war. The printing of a single number of a code in magnetic ink could be made to actuate a selector or stop a labeling machine. It is my belief that there are ways and means to make it impossible to mis-label a container or to mis-code one, and the industry is now certainly big enough to spend adequate money on the necessary engineering research to accomplish this or any other production purpose.

Plant Site Research

Few people think of plant site location as a research project. But it is, and a very abstruse one in fact. Over the thirty years of my consulting practice I have developed a site inquiry chart that lists ninety-five factors that require investigation, and I add to the list every time the problem comes up.

Too many plant sites are selected by Mr. Bigshot, the president. Not being an engineer usually, his judgment on a plant site is worthless. I have had all the following reasons given me by company presidents as a reason for buying a particular site: It is near Mr. Bigshot's home—or not "more than ten minutes away by car." It is near his college. It fronts on a main highway and therefore will have a lot of advertising value. (This one is frequently advanced by presidents of ethical companies whose products are known by and advertised only to doctors.) The site has a "pretty outlook." Price is a factor too, but if Mr. Bigshot falls into the clutches of a fast talking real estate dealer, a few thousand dollars more than the site is worth won't make any difference to him. I have known several instances where company presidents called in real estate dealers and bought the sites themselves without any reference whatsoever to enginering or production people. When a company president gets sold on a site and buys it, his production and engineering people have no alternative but do the best they can with it. As a consequence of this approach sites have been bought in bad labor areas, with inadequate transportation, water, sewage and power facilities. This state of affairs is not new; it was always characteristic of this industry as is shown by the indisputable fact that the majority of the pharmaceutical companies in this country are located on sites that are inadequate in several particulars. And because they are wrong, substantial elements of operating costs cannot be reduced or got rid of completely. But because the pharmaceutical industry enjoys such wide profit margins, it can endure substantial operating cost increments without being hurt. But this is no reason for ignoring the existence of such cost elements, and they can be avoided by adequate plant site research before any construction is undertaken.

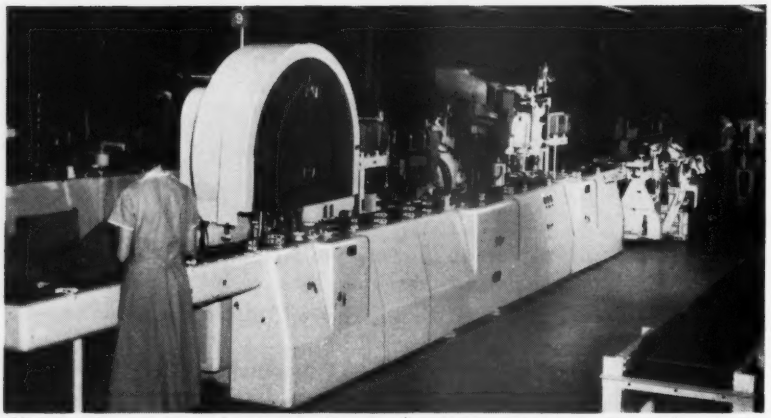
Let me illustrate the point with a few examples taken from experience. Recently I was called upon to revamp a biological plant. Analysis of the problem showed that any further construction on that site would have been a gross waste of money because of inadequate water supply. The site had dozens of wells, all relatively shallow, and all variable in output especially during dry spells. Since the plant was out in the country no city water was available. I pointed out to the management that unless an adequate quantity of well water could be found on or near the site, the company would have to find a new site and gradually abandon the old. Here's a case where the original management failed to investigate the water tables before buying and developing the site. Water experts were called in and made test borings all over the site but failed to find water in anything like adequate quantities. Fortunately, water was found in enormous quantities on an adjoining parcel of land. (It is a good thing for the management that the farmer who sold the land for a few thousand dollars didn't know what was up or he'd have held out for a million. He'd have gotten it too because the company had to have vast quantities of additional water or abandon an investment of many millions of dollars.) I know of another instance when a company built an antibiotic plant on the assumption that adequate supplies of water could be obtained from the adjacent river. No one however took the flow of the river during dry seasons into account before the plant was built. And when it was built the river could not supply adequate quantities of water. Again luck saved the company because wells driven on land across the river provided an adequate supply. Recently a client was interested in the purchase of a plant which appeared to be adequate for his purposes, and the site contained forty-five wells. This fact was a suspicious circumstance, and when the wells were investigated, it was found they were all shallow and variable in output. Further investigation showed that deeper wells produced salt water. For this reason among others my client lost interest in the property. But the property had been developed and a large one-story building built on it by one of the very large firms in this country. What about *their* research? Evidently

THE LEADERS LOOK TO PNEUMATIC

- New plants Pneumatic equipped
- Avon Products Inc., example
- More speed, flexibility provided

Where "modernization" is the order of the day, packaging is coming in for particular attention. More often than not equipment now in operation has been made obsolete by new design Pneumatic machines — developed for the faster, more efficient handling of dry, free flowing materials, as well as liquids and semi-liquids.

Pneumatic engineers have been exceptionally busy in the last few years, shattering previous standards of productivity through radically different approaches to the mechanics of packaging. Waste eliminating accuracies, and cost cutting speeds never before achieved, now feature the performance of the latest Pneumatic machines.



High-Speed conveyor-synchronized bottling line in operation at Avon's ultra-modern plant in Morton Grove, Illinois.

Leaders in their field — such as Avon Products Inc., makers and merchandisers of a line of nationally known cosmetics — are acutely aware of the absolute necessity to keep up-to-date in the all-important packaging phase of their production. In their sparkling new plant at Morton Grove, Illinois, their famous Avon Skin Freshener and Avon After Shaving Lotion, get the full treatment — from container cleaning right through filling, capping and labeling — on the very latest, fully synchronized high-speed Pneumatic lines. Without the slightest hesitation, on spaced centers to prevent jar or jostle from contact, the containers flow through the different stages as smoothly as oil through a pipe, with never a hand laid on them, from beginning to end.

Outstanding features of this equipment are the extreme gentleness with which it handles delicate, easily marred caps, and its easy adaptability to changes in container shapes and sizes. Within unusually broad limits, shifts from one to another may be made in short order — with minimum down time. Bottling will never be a bottle neck in this plant.

Keeping containers moving through the line with such automatic regularity and precision as to result in "lower cost per container" handling is a habit with Pneumatic machines. That, no doubt, is the reason why the country's leading producers have the habit of using them so extensively. Doubtless, also, it is the reason why so many other concerns "follow the leaders" to Pneumatic.

★ ★ ★ ★ ★

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PNEUMATIC

the water problem was investigated after the plant was built.

While I am on this subject I am morally obliged to tell one on myself because I can see Bob Cutter reading this with a nasty grin on his puss—his ugly puss, I should say! As a preface I must explain that I regard the availability of well water in adequate quantities as so important that for years I have insisted that my clients write into a purchase contract a clause permitting the purchaser of the site to drill a test well at his own expense. If the water is not there the deal is abrogated. In the case of Cutter, I was responsible for the location of Cutter's eastern plant in Chattanooga. I didn't insist on drilling a test well on the site because I had the assurance of the TVA engineers and the geology department of Chattanooga University, that beneath a limestone strata extending under the entire area, there was a gravel bed containing an unlimited amount of water. Supporting this was the fact that less than a quarter mile away there is a school with a one hundred foot well that had been tested at 750 gallons per minute. Also I relied upon my experience with Chattanooga Medicine Co. extending back to 1936, during which experience we found cold water in voluminous quantities every time we punched a well down a hundred feet or so. Moreover I had the assurance of the oldest well driller in the city, who assured me of unlimited water supplies, because in thirty years of drilling all around Chattanooga he had never failed to hit adequate quantities of water. He had never had the experience of drilling a dry well. With all this assurance and with Korean War necessities demanding completion of the plant in record time, I didn't insist on drilling a well; in fact I did everything possible to expedite construction. When the construction was well along we started to drill a well. We drilled clean down to China without hitting enough water to rinse your mouth with. The damn limestone strata must have taken a dive just where we were drilling. Believe me I was on the pan. The Cutters needled the hell out of me and still do. However we had city water to fall back on if necessary and when the well driller moved his rig a few hundred feet, two relatively shallow wells brought in a sufficient quantity of water. Believe me! since that time I haven't allowed any client to conclude a site deal until adequate wells have been drilled.

City water is always expensive and sometimes inadequate. Cities and towns are burgeoning with the population explosion to such an extent that existing water sources are inadequate and usage restrictions are either in being or shortly will be imposed. I have known town officials to lie about the amount of city water available. In one case an assurance of a given daily minimum quantity of water was based upon a water supply which had not yet been developed or approved by the state! In some states water tables are falling so rapidly that in certain areas the states will not permit wells to be drilled at all. In a number of areas plants requiring a lot of water for process or air conditioning purposes have had to be abandoned because they could not get enough water.

If I have seemed to dilate excessively upon water supplies it is because I regard water as a primary resource for successful plant operation. You must remember that in locating a new site for a plant you are establishing the basis for a fifty-year operation during which time water requirements may and probably will multiply beyond your most exaggerated anticipated requirements. And water is only one of the vast number of factors that will influence your future operating costs. It is easy enough to build a plant but it is damned difficult to find an adequate site.

Communication

For years I have deplored the fact that scientists and engineers as well as business men generally, cannot write or speak accurate English because this primary subject has been negelected for years in the high schools and colleges. Henry Chauncey in the November '59 *Atlantic* puts it this way:

"Communication is one of the most prized and expensive areas of American enterprise today, particularly in the commercial world. We are an amazingly, sometimes exhaustingly verbal nation, constantly exhorted through journalism, advertising, and the media of entertainment and edification to talk out problems, whether they are personal, interpersonal, national, or international. Yet the art of written communication, which is clear thinking clearly expressed, appears to be disappearing rapidly. To educate our student population so that each individual can learn to express his ideas, no matter how limited or abstruse they may be, is hardly too lofty a goal. To accomplish it requires a tremendous concerted effort toward providing our students with opportunities to write frequently, under competent supervision, and within the framework of a creative curriculum."

Granulating

In view of the work being done upon new methods of granulating, a summary of the present art may be helpful. It is a pity that all the ingredients that go into tablets cannot be purchased in various mesh sizes so that the preparation of a tablet formula would consist merely of mixing. As it is, granulation has for its primary object the conversion of fine powders into larger aggregates so that the material will flow readily out of the hoppers into the dies of tablet presses. To accomplish this aggregation it is necessary to wet the material with water, solvents, sugar solutions or mucilages. The mixed and wetted material is forced by one means or another through a screen of appropriate size to form granules, which are then spread on trays and dried. After drying the trays usually must be put through a screen again to break up crusts

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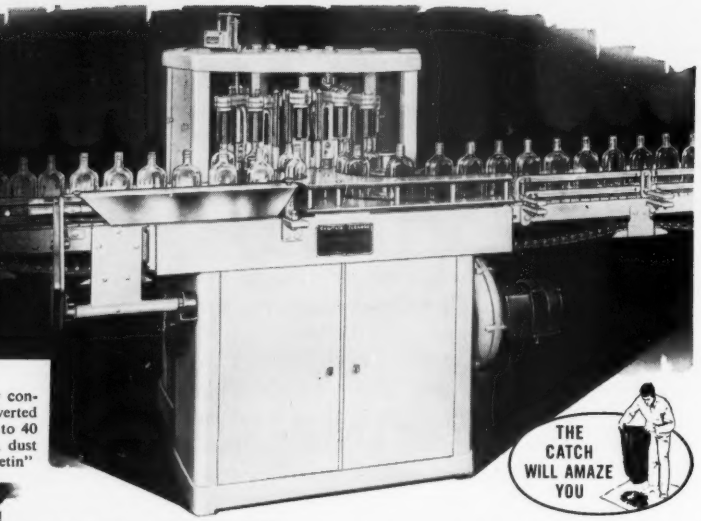

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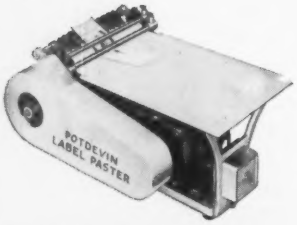

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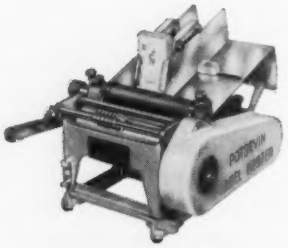

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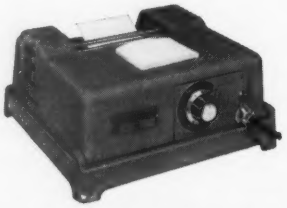

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formed in the drying process. Thus, granulation by conventional means provides for mixing the ingredients uniformly together, which is usually done in a double sigma blade mixer; it provides for wetting the material so that it will become more or less adhesive so that it can be granulated. Supplementary operations may be necessary on some granulations; for example milling may be necessary to break up hard crystalline materials or to distribute colors. When the granulation has been finished it is mixed once again with lubricating materials. Some formulas containing a variety of vitamins or incompatible ingredients may have to be granulated in fractions and then combined in the lubricating process.

Obviously the conventional granulating process is one involving a lot of manual labor and a considerable amount of over-all time because of the drying cycle.

Dry granulating precompresses the mixed ingredients together in the form of slugs or flakes depending upon the equipment used, and the product of this equipment is ground to appropriate mesh to form the finished granulation. I have always felt that with suitable adjustment in techniques any formula can be made by the dry method.

There are several variants of the wet granulating method in which the mixing, moistening and drying are accomplished in the same apparatus. The oldest of these methods is the use of the conventional coating pan. The ingredients are tumbled in the pan until adequately mixed and are wetted with a spray, after which the tumbling ingredients are air-dried in the conventional manner.

A variant of this is to use a conical or double cone mixer in which the ingredients are first tumbled until mixed thoroughly; then granulating solution is introduced through a trunnion in the shaft of the apparatus and the product is moistened as it tumbles. Such vessels may be jacketed so that the product can be mixed, moistened and dried in the same apparatus.

A more recent development is the Wurster air flotation process. This comprises a vertical air chamber fitted with atomizing nozzles. Dry, heated air is forced up through the vertical processing chamber causing the dry powders to tumble rapidly. After a preliminary mixing cycle, fluid ingredients and granulating solutions are atomized upon the tumbling particles and these particles are instantaneously dried as they tumble.

All tumbling processes whether accomplished in an air stream or a rotating vessel have a tendency to produce small spherical particles of relatively uniform size. These little spheres adapt themselves very well to compression because they run like shot, whereas traditional granulation comprising aggregates of varying size and shape have a tendency to stick and do not flow readily. There was a time when the old artisans in tablet-making insisted that particles had to be irregular in size and shape in order to bind together properly under compression. This theory has been proved to be without foundation because tablets made from spherical granulations meet all the tests for hardness, disintegration and shelf life.

Forced feeding of tablet dies is rapidly being adopted and there is a possibility that in time accurate centers for tablets that are to be film- or sugar-coated may be made directly from powder without any preliminary granulation at all.

There are some other possibilities in the offing about which I am not yet at liberty to write. But I certainly get a kick out of the various approaches that are being made to production problems that have had no attention for several decades.

Fibre Metallurgy

A few years ago we were excited about the possibilities of powdered metals which could be pressed into required shapes in a matter of minutes as compared with conventional casting methods. Now the Armour Research Foundation has announced fiber metallurgy, which consists in converting metal scrap into metal fibres similar to steel wool and then felting these fibres. The felted fibres are heated to a given temperature, which fuses the fibres at their contact points. The resulting matt can be extruded or otherwise shaped and has remarkable vibration and sound insulating properties. Ceramic and plastic substances can be mixed with the metal fibres in the felting process, producing a substance with an enormous range of uses.

Polyethylene Packaging Machine

Quickpak Machinery Corporation, 6039 West Washington Blvd., Culver City, California, has brought out a new, low-cost polyethylene packaging machine that can cut labor costs up to 50 per cent. This unit, the Quickpak Model R-16, utilizes inexpensive film in bulk rolls to fill, close and make a bag in one fast operation, eliminating the labor of hand-loading pre-manufactured bags.

The machine handles all package sizes from that of a pencil to a shirt, and no adjustment is necessary in changing package size. It will handle a wide variety of irregularly shaped products. It trims and seals in one stroke.

Durable, Multi-colored Spray Paint

The Plextone Corporation of America, Newark, N. J., has developed a paint that is sprayed on in two colors with a single coat, which creates an interlocking color network. Called Plextone, it can be scrubbed with soap and water or detergents, can be touched up easily, hides minor defects and blemishes, is almost odorless, and has anti-static properties that repel dust.

Plextone has been used in the Hoffmann-La Roche plant in Nutley, N. J., to cover 1,000,000 square feet of wall in the 71-building complex, and there

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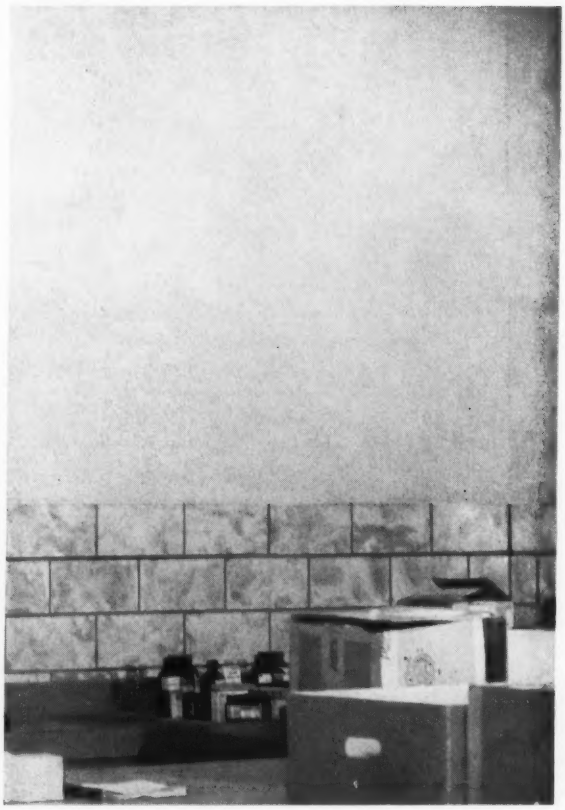

Plextone on cinder block wall in Hoffmann-La Roche packaging room.

will be more, since the expansion of the facilities is not yet completed. Much of this covers cinder block, for which it was said to be especially suited because of its durability, washability, its being less monotonous than regular paint over large surfaces, and its capacity to bridge voids in the wall surface, thus camoflaging the cinder block.

Among the buildings in which Plexton is already in use are a pharmaceutical manufacturing unit, an animal research laboratory, and four manufacturing buildings. It is being used in new construction instead of glazed tile, which is far more expensive. Plextone sprayed on seven years ago is said to look as well as it did then.

Regular paint costs less initially, but re-painting is so postponed that the saving in the long run is considerable.

Continuous Piston Filler

The Elgin Manufacturing Company, 200 Brook St., Elgin, Ill., has introduced a continuous piston filler for liquid or semi-liquid products in glass, tin, aluminum, or polyethelene containers. The unit, called the Elgin Two-Cylinder Non-Stop Piston Filler, eliminates surge, starting and stopping of containers. Containers move continuously with filling heads moving along with them during the filling cycle. When the cycle is completed, heads automatically return to the next two containers in the line. This makes for higher filling rates. The unit also provides simplified equipment for container or product changeover. It is simple to clean; a manifold feed can be substituted for the reservoir; an agitator can be inserted in the reservoir; and cylinders and pistons are available in various sizes.

Ribbon Blender

A new ribbon blender claimed to be the low-cost answer to most mixing problems has been engineered by the Munson Mill Machinery Company, 1000 Seward Ave., Utica, N. Y.

The Munson Ribbon Blender gives 20 to 200 cubic feet of thorough blend, a wide range of capacities, elimination of contamination, controlled agitation, maintenance-free operation, and low power requirements. The all-welded, heavy-duty tub is equipped with externally adjusted packing glands and the agitator is a reversing double-spiral ribbon supported on heavy-duty outboard bearings. Available with jacket for steam or water, it comes in capacities ranging from 20 to 200 cubic feet.

Rotary Shelf Laboratory Oven

The Despatch Oven Company, 619 S.E. 8th Street, Minneapolis 14, Minn., is marketing rotary shelf ovens for production requiring precise control of heat.

The shelves, manually or mechanically operated, are spaced on 12-inch vertical centers. The manual is recommended for temperatures below 300° F., and the mechanical for temperatures to the maximum of 850° F. The shelves come in sizes to fit all Despatch V ovens, which can be supplied for gas, electricity, or steam heat. Even without the rotary shelves this model maintains heat uniformity within $\pm$ 1° C. throughout the work chamber. Addition of the rotary shelf is said to give identical heat to every product placed on the shelves.

Hot-Melt Adhesives Extruder

A new hot-melt adhesives extruder has been developed by Potdevin Machine Company, 285 North St., Teterboro, N. J., to meet the need for integrating solid adhesives into carton and bag making production lines.

The Model SE Hot Melt Adhesive Extruder is equipped to handle solid adhesives in granular or pellet form, converting them to molten adhesives to be applied directly to the point of bond. Adhesive is placed in the hopper, heated, and is then extruded in a continuous stream through a flexible nozzle. The model attaches easily to most standard bag or carton making machines, from which its drive is derived.

The machine can extrude approximately 0.04 gal. of molten adhesive per minute.

Accessories include nozzles for special seaming jobs, recirculating water tank and pump for cooling, and variable speed drive or change gear arrangement.

IN CARRTONE'S DEPARTMENT, worker loads a Stokes stainless steel Mixer, in which 100 lb. of tablet ingredients are blended in 20 to 30 minutes. Carrtone's tabletting room is just beyond, and the coating and polishing room can be seen in background.

other Stokes equipment at work for Carrtone...

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One operator supervises a battery of Stokes Coating Pans and one Stokes Polishing Head in Carrtone's coating and polishing room. Each pan handles from 75,000 to 250,000 tablets per load, depending on tablet size.

The Stokes Drying Closet is designed for efficient drying of pharmaceutical granulations. At Carrtone, it is also used for fast, thorough drying of glassware and other equipment used for packaging parenteral medications.

Hundreds of thousands of tablets a day roll out of each Stokes Automatic Tabletting Machine at Carrtone. Operator needs only to fill hopper with ingredients . . . returns later to pick up finished tablets.

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Industry's Books . . .

Lipide Chemistry, *by Donald J. Hanahan, Department of Biochemistry, University of Washington, with contributing chapters by Frank R. N. Gurd, Equitable Life Assurance Society, and Irving Zabin, University of California, 303 pp., John Wiley & Sons, Inc., New York, cloth,* **$10.**

This work examines the progress made during the last ten years in a fast growing field, and evaluates its present status. It proceeds from a discussion of each major class to the substances with which lipides are found in nature—the more complex lipoproteins. Analysis is provided of the chemical nature of these fatty substances (mainly from mammalian sources, but applicable to many others) and the proper means of isolating naturally occurring lipides. The difficulties encountered in establishing with certainty the structure and purity of lipides isolated from natural sources are considered as well.

Medieval And Renaissance Medicine, *by Benjamin Lee Gordon, M.D., 843 pp., Illus., Philosophical Library, New York, (1959), cloth,* **$10.**

One of the great blind spots in medical history is the medieval period. This book fills this void by offering for the first time a thoroughly documented work on the practice of medicine during the Middle Ages and early Renaissance. It should be of special interest to historians, physicians and students of the period. Dr. Gordon is a contributor on medieval physicians to the Encyclopaedia Britannica, and the author of Medicine Throughout Antiquity, The Romance of Medicine and Between Two Worlds.

Amino Resins, *by John F. Blais, Chemical Consultant, 220 pp., Reinhold Publishing Corp., New York, (1959), cloth, pocket size,* **$4.95.**

This covers the chemistry, manufacture, and major applications of urea and melamine resins, and the newer ethylene urea and benzoguanamine. The book describes in detail amino resin applications in adhesives, molding, laminating, textiles, paper, and surface coatings.

The Chemistry Of Plant Gums And Mucilages (and Some Related Polysaccharides), *by F. Smith, Professor, Institute Of Agriculture, University of Minnesota, and R. Montgomery, Associate Professor, Department of Biochemistry, State University of Iowa, ACS Monograph No. 141, 627 pp., Reinhold Publishing Corp., New York, (1959), cloth,* **$18.**

Everything that is known of the chemistry of these versatile substances is present in this comprehensive new monograph. This includes the rapid strides made in the last few years. The purpose of this book is two-fold, to evaluate critically the progress made in this fascinating field, and to encourage new ideas for the industrial application of gums. The treatment of the subject is exhaustive, and begins with gum function and origin. The gums are classified botanically before the text takes up their chemical and physical properties. Because of the growing commercial importance and possibilities of these raw materials, this monograph provides industry with the basis of information it needs for the successful development of gums and mucilages.

Synthesis And Organisation in the Bacterial Cell, *by E. F. Gale, 110 pp., John Wiley & Sons, Inc., New York, (1959), cloth,* **$3.50**

This volume makes available the 1959 Ciba Lectures in Microbial Biochemistry, presented at the Institute of Microbiology, Rutgers University. The theme of the lectures is biosynthesis with emphasis on synthesis of proteins and nucleic acids. Divided into two main sections, the book begins with a discussion of the bacterial cell, how it has been studied, the chemical nature of its parts, how these parts function in turning a conglomeration of physico-chemical systems into a living cell, and how this essential organisation is distributed and/or destroyed by the action of certain antibiotics such as penicillin, polymyxin and chloramphenicol. The second section deals with research into the mechanism of protein and nucleic acid synthesis, one of the few remaining unsolved problems in biochemistry.

Antiseptics, Disinfectants, Fungicides, and Chemical And Physical Sterilization, *Edited by George F. Reddish, Ph.D., St. Louis College of Pharmacy, Second Edition, 975 pp., Revised, 67 Illus., 134 Tables, Lea & Febiger, Phila., (1957), cloth,* **$15.**

The purpose of this book is to collect, correlate, and evaluate pertinent information relative to antiseptics, disinfectants, and fungicides, as well as chemical and physical methods of sterilization. This has been accomplished by contributions from various authorities who are experts in their respective fields of antimicrobic research. The subject matter covers the most important facts relating to antimicrobic agents generally, exclusive of antibiotics and chemotherapeutic drugs. Because of the diversity of the specialized information involved, the cooperative efforts of recognized authorities make possible reliable and complete surveys of the different phases of this involved and, in some respects complicated array of subjects. More important are the interpretations and evaluations of the subject matter presented by each contributor. This second edition has become necessary because of many recent advances in certain areas of the subjects covered in the broad field of antimicrobic agents. For this reason three entirely new chapters on specific subjects have been added and others have been expanded to include new developments in their respective categories.

Introduction To Rubber Technology, *Edited by Maurice Morton, Director, Institute of Rubber Research, The University of Akron, 547 pp., Illus., Reinhold Publishing Corp., New York, (1959), cloth,* **$10.**

There has been a growing demand on the part of the technologist as well as from others in the sales, service, and purchasing activities for more technical information about the growing field of synthetic rubbers and allied synthetic polymers. Hence various rubber groups in all parts of the country began sponsoring lecture series on rubber technology for the benefit of their members and the industry as a whole. This book is a compilation of selected lectures, which introduces new members of the rubber industry to the basic aspects of rubber technology.

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Perfumer's Shelf

Perfumes on the Skin

In his usual fine writing style, F. V. Wells presents the results of his studies on the behavior of perfumes on the skin in *Soap, Perfumery and Cosmetics* for December 1959 (30: 1216, 1959). Despite modest disclaimers on the part of the author, the investigation constitutes a most valuable contribution to the formulation of perfumes. Using four subjects, a small drop of the odorant or a 10 per cent solution of the solid, was applied to the back of the hand and checked for odor at intervals for 12 hours. Degree of persistence was classified on a scale with 6 as the maximum, strength on a letter scale from A to C, with A as maximum, B intermediate, and C as very weak. A powerful, persistent odor, would thus be rated as AAAA 6, a substance rated as BBCC 6 is of intermediate to low strength, but persistent, while an ABCC substance is powerful, but fugitive.

The tables reveal that many odorants last longer on the skin than would be expected from their paper-volatility; nevertheless, all perfumes are relatively evanescent on the skin. Only a few perfumery materials undergo drastic changes in odor on the skin and this odor-instability seems to be more marked in the case of women.

Among the essential oils, coriander gives an attractively fresh odor while bergamot is rather disappointing. Among other long-lasting odors of natural origin are those of angelica root and seed, Chinese Atractylis, carrot seed, celery seed, citronella, clary sage, fenugreek hyperessence, labdanum, lovage, oakmoss, parsley, patchouli, pepper and zdravetz. Ambergris and civet last longest of the animal extracts.

Undecylic and undecylenic aldehydes, lauric and methyl nonyl acetic aldehydes; peach, strawberry and coconut pseudo-aldehydes; amyl cinnamic aldehyde, amyl salicylate, benzophenone, benzylidene acetone, borneol, civettone, decahydrobetanaphthyl acetate, jasmone, hydroxycitronellal, methyl anthranilate, methyl phenylacetate, musk ambrette, phenylacetaldehyde dimethyl acetal, vanillin and vetiveryl acetate —are also prominent among the odorants that remain stable and show good lasting properties on the living skin.

Anisaldehyde begins to deteriorate in odor ten minutes or so after application. It becomes harsh and then sour, loses its hawthorn character, and begins to develop a cuminic note.

Phenylacetaldehyde begins to lose its freshness during the first half-hour. It then becomes unpleasant before fading. Much better results were given by the acetals of this aldehyde.

Carvone develops a harsh note on the skin and this, too, shows up in the sweet-sour quality of caraway seed oil.

The odor of *dimethyl hydroquinone* is not attractive on the skin; but it fades much more rapidly than does coumarin. The odor of *phenylethyl alcohol* immediately suggests horseradish rather than rose, but this somehat peppery rose note is maintained well for the first hour. *Isoeugenol* and *terpineol* lose much of their force and character when applied to the skin.

The important group of *musk odorants* is well worthy of study in this respect. By far the most stable and long-lasting of the nitro-musks is the Ambrette, which keeps its strength and sweetness on all types of skin. In this it is not even surpassed by cyclopentadecanolide. The Ketone blends well with the odor of the skin itself, but then becomes slightly urinaceous—a defect that is intensified on certain skins. The Xylol is sweeter at first than would be expected but later verges towards the odor of cocoa. An indane musk exhibited a musk odor for two hours, but this then changed to something suggesting the higher aliphatic alcohols.

Citronellol and *rhodinol* present points of interest. Their degree of persistence varies considerably with their quality and origin. A "Pure Chemical" quality of dextrocitronellol lasted longer on the skin than other grades and better maintained its fresh rose odor. A high-priced rhodinol from a well-knwon source is reminiscent of a mixture of menthol, elemi, oil and geraniol ex palmarosa.

The *anisyl* group merits consideration because of the chemical relationship of the odorants and their general olfactory resemblance as a family. Despite their individual odors, they have the common "family face" typified by the anisyl osmophore. The ether, anethole, lasts reasonably well and its odor remains clearly recognizable. Anisic alcohol, on the other hand, is of nondescript character on the skin, and has very little anisic odor. Anisyl acetate remains fresh and heady (an unusual property in skin-applied perfumes), while ethyl anisate develops a heavier, warmer note. The ketone, paramethoxy acetophenone, lasts well and is fresh, floral and persistent in the expected hawthorn tonality. It may be noted from the tables that the persistence of these anisic odors on the skin does not follow the same pattern as their persistence on paper smelling slips.

Amyl salicylate lasts much longer on the skin than its life on paper would indicate.

All the *aliphatic aldehydes* come up well on the skin, but they vary considerably in persistence and each

undergoes subtle phase-changes. The advisability of using two or more of these aldehydes in combination, or with the corresponding alcohols, becomes even more obvious when they are subjected to skin tests.

Such *acetals* as the dimethyl and glycerol acetals of phenylacetaldehyde give interesting results on the skin; the acetals as a class probably merit close attention in this respect.

In general, the application of perfumes to the living skin markedly reduces their odor life and removes the finer edges from their character. It is much more difficult to compose a perfume that gives an attractive effect—lasting for an hour or more—on the skin that it is to devise a similar perfume for use on paper or cotton fabrics.

Bulgarian Rose Oil

Bulgarian rose oil has been investigated by a number of authors. The most important ingredients are: citronellol and geraniol which make up about 80 per cent of the total composition. Small quantities of other components have been isolated: phenethyl alcohol, linalool, nerol, farnesol, nonyl aldehyde, citral, benzaldehyde, eugenol, eugenol methyl ether, and carvone.

In the fraction of a Bulgarian rose oil boiling between 40 and 105° C. at 10 mm., C. F. Seidel and M. Stoll, (*Helv. chim. acta*, 42: 1830, 1959) demonstrated the presence of benzaldehyde, phenethyl alcohol, citronellol, and linalool, along with oenanthaldehyde, methylheptenone, n-hexyl alcohol and an unknown oxide $C_{10}H_{18}O$. The constitution of the oxide has been determined by oxidative degradation to be 3-methyl-2-(3′-methylbut-2′-enyl)-tetrahydrofuran.

Sun-Screen Perfumes

SUN-TAN preparations are generally used at one time in a large quantity over a considerable surface of the body so that the perfume is very noticeable. The odor of human perspiration is usually intensified in a blazing summer sun, so the perfume of a sun-tan preparation should be sufficiently strong to be pleasant despite this conflicting odor.

In the selection of perfume for sun-tan preparations according to V. Vasic (*Manuf. Chem.* 30: 490, 1959) a factor of first importance is that these preparations are intended for use by both sexes. A feminine, heavy floral, perfume will not appeal to men. The scent must be sexually neutral or have a dual appeal. Rose, lily-of-the-valley, rose-lavender and rose-neroli notes are appreciated by both sexes. Lilac and violet are appreciated by women and accepted by men, and lavender, fern and cologne are appreciated by men and accepted by women. Strong and tiring perfumes should be avoided. A comparatively light floral bouquet with a lavender suggestion or a very light shade of lilac, rose and honeysuckle with a modern top note would be most suitable. Certain perfume compounds, such as those of the clover group, are unsuitable because they tend to accentuate the odor of the the sun-screen if this does possess an odor. Heavy perfumes should be avoided as the odor can be overpowering.

Stable perfume compositions with a basic rose note can be built up on rose alcohols, such as geraniol, nerol, citronellol, phenylethyl alcohol and tetrahydrogeraniol. Small additions of rectified geranium oil and palmarosa oil, and also genuine rose oil, will improve the rose note. The rose note blends very well with the violet note of ionones, especially with methyl ionone, and a very attractive composition can be compounded based on this combination. Guaicwood oil is a useful blend and fixative for the rose and violet perfumes, enhancing the sweetness of many compositions. Styrax absolute is also an excellent fixative.

The combination of rose note and jasmin note is also very attractive. Jasmin note is based on α-amyl cinnamic aldehyde suitably rounded off. In the jasmin base intended for sun-tan creams indole should not be used. Addition of methyl ionone produces very interesting effects in the rose-jasmin combinations. Cyclogeranyl acetate and cyclamen aldehyde give freshness and lightness to the composition.

The concentration of perfume in sun-tan preparations should be just sufficient to mask the odor of the base and the sun-screen and impart a pleasant scent to the finished product. It is difficult to generalize about the concentration of perfume for all sun-tan preparations in view of the range of odors one is likely to encounter with different screening agents and the vehicle. However, the usual content ranges from 0.1 to 0.5 per cent.

Ingredients employed in sun-tan preparations, such as carries, solvents and sun-screen agents, are generally not reactive in the presence of perfume materials. The main problem involves photolysis, because sun-tan preparations are exposed to the direct and strong sunlight. Perfume materials usually used in the compounding of the perfumes for sun-tan preparations stand up rather well in sunlight.

Sun-tan preparations are very often tinted, usually to a light brown color. In compounding a perfume for these preparations the use of ingredients which cause discoloration, such as methyl anthranilate and vanillin, is not necessarily to be avoided. But the use of ingredients known to cause discoloration should be avoided in perfumes intended for white sun-tan creams or other white or pale tinted preparations.

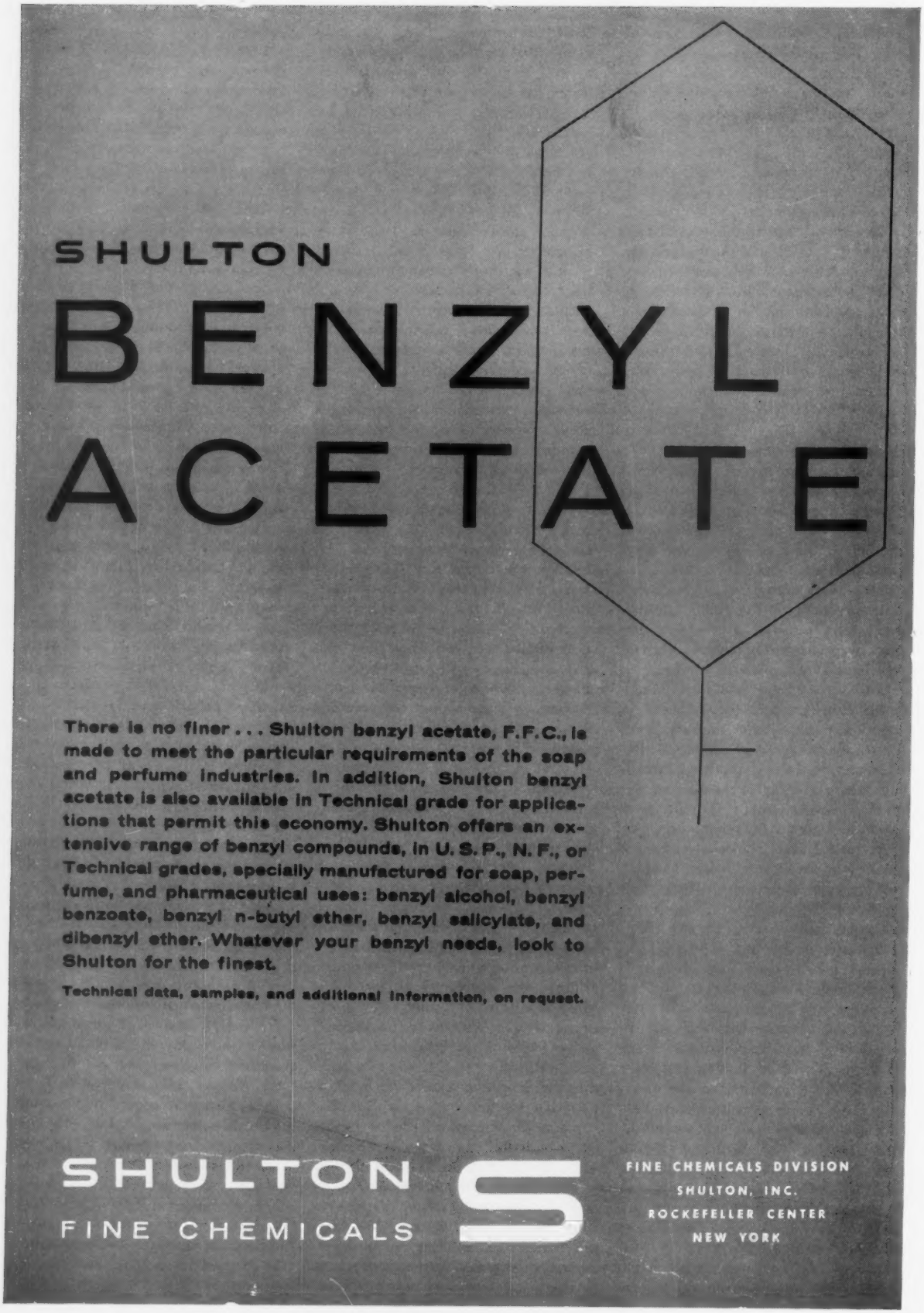
Sun-tan preparations may be of such varied types as oils, lotions, creams and jellies, prepared by different methods and which may or may not be greaseless. It is difficult, therefore, to recommend the best method or time for incorporation of the perfume for all types.

Oil-soluble perfumes should be used in sun-tan oils. They are usually prepared by simple mixing of oil-soluble sun-screen, anti-oxidant and perfume with an oily base, followed by filtration. No heat is used.

In water-alcohol sun-tan lotions solubility problems may be encountered if a large proportion of water is present. It has been suggested that the perfumes be mixed with the alcohol and alcohol-soluble materials, stirred until there is a clear solution and water added. The problem can be also overcome by incorporating perfume solubilizer.

In emulsified lotions the perfume is usually soluble in the emulsified material. The oil-soluble materials, without the perfume, are heated to 80° C., water heated to same temperature is stirred in and the emulsion allowed to cool. Perfume is incorporated when the temperature has dropped to about 45° C.

Chloromycetin Succinate (Parke, Davis) is an injectible form of chloramphenicol, available as a sterile powder for dilution before injection.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Compounder's Corner

Formulating Cosmetics

Dr. W. W. Middleton addressed a meeting of the British Society of Cosmetic Chemists in November on the general subject of modern trends in formulation. His approach was the modification of raw materials to produce better end products.

In antibacterials products, for instance, triacetin functions through slow hydrolysis and gradual release of antifungal acetic acid. Certain compounds of formaldehyde with urea or hydantoins gradually release small amounts of formaldehyde with less obtrusive odor and less likelihood of irritation. In another type of modification, although linoleic acid is subject to rancidity, isopropyl linoleate or the adduct of linoleic acid and urea are stable. Among antiperspirants, aluminum chlorhydroxide solution may be gelled by the addition of boric acid or borax in the presence of glycerin. Although silicones are effective antifoam agents, they may be incorporated in shampoos to improve conditioning and without excessively affecting lathering power. A number of patents have suggested that although mixtures of anionic and cationic wetting agents are incompatible, equimolecular proportions may be used in creams as emollients and thickeners. Alkyl phosphate esters, less effective than the corresponding sulfates, may nevertheless be useful in formulating O/W and W/O emulsions.

Sustained Release Cosmetics

Dr. T. Ruemele, in *The Retail Chemist* for December 1959, wrote a short piece with the above title. Referring to a sustained release antiseptic based upon a complex of iodine and PVP and to the slow release of antifungal fatty acids from glyceryl triacetate and tripropionate, Dr. Ruemele suggests that prophylactic cosmetic preparations might be improved if their active ingredients could be formulated for slow and continual release to the skin. Examples of acne, seborrhea, and antiperspirant preparations are suggested.

Although the intact skin is so complete a barrier that it tends to make virtually any topical preparation somewhat of a sustained release product, we feel that Dr. Ruemele's suggestion certainly has merit that can be translated into an effective promotion story. Investigation along these lines may be profitable.

New Aluminas

J. T. Baker Chemical Company, Phillipsburg, New Jersey, has developed four high-purity, finely divided alpha and gamma aluminas.

Each type is controlled within a narrow range of particle size. The alpha aluminas vary from 0.02 to 0.4 microns and from 99.7 per cent min. to 99.96 per cent min. Al_2O_3. The gamma aluminas vary from 0.002 to 0.1 microns and from 99.7 per cent min. to 99.96 per cent min. Al_2O_3.

In addition, a wide range of other micron sizes and purities can be produced depending upon customer requirements.

Maprofix ES

Maprofix ES is the sodium salt of a sulfated ethoxylated lauryl alcohol being offered by Onyx Oil & Chemical Co. of Jersey City, N. J. The product has excellent detergent, wetting, dispersing, and foaming properties. It has an extremely low cloud point and high tolerance to calcium and magnesium ions so that it has these inherent advantages over sodium lauryl sulfates.

Suggested applications include cosmetic, pigment suspension, and latex emulsion formulations. Maprofix ES is highly recommended for cosmetic applications, particularly in shampoos. The viscosity of these shampoos can be markedly increased and accurately controlled by the addition of inorganic salts such as potassium or sodium chlorides as well as by the use of lauryl alcohol or ethoxylated lauryl alcohol.

Thiogel

Thiogel is a tradename for thiolated gelatin, a new development of Schwarz Bio Research, Inc. It is a versatile new compound containing highly reactive sulfhydryl groups and showing radically different gelling properties.

Thiogel is prepared by reacting the epsilon amino groups of the lysine in gelatin with a thiolactone, thereby forming a free SH group attached to the protein chain by a peptide bond. When a suitable oxidizing agent is added to concentrated aqueous solutions of Thiogel, a heat stable gel is formed within a few minutes without the necessity of chilling. Thiogel thus has the unique quality of being highly water soluble until cross-linking occurs, when it becomes water insoluble at temperatures up to 100° C.

Thiogel in solution is stable at acid *p*H. In the high *p*H range it is readily oxidizable and even without the addition of an oxidizing agent, it will oxidize and gel when exposed to air at room temperature over extended periods of time. An additional feature is its ability to be reversed from the cross-linked gel to the soluble form by the application of suitable reducing agents.

Thiogel is available as a white powder protected by a drying agent, as it is susceptible to some oxidation unless it is stored dry and at low temperatures. Available Thiogel preparations extend over a range of gel strength, viscosity, and sulfhydryl concentration. When a material is to be utilized primarily as an SH carrier with low gel strength, Thiogel A can be selected. Thiogel B and Thiogel C are indicated where compounds of high structural rigidity and gel strength are required while the sulfhydryl concentration is to be varied.

MASCARA

(*Continued from page 169*)

produced unsightly smudges when eyelids were wetted; they were quite irritating in the eyes. On the other hand, soap is a good wetting agent and produces a mascara that is easily applied uniformly, dries rapidly, and leaves a film with good properties. Using a triethanolamine soap and wax in a cake mascara did away with virtually all the possible irritation, and gave some degree of water resistance to the film. Unfortunately, these mild soaps do not dry as rapidly and completely as sodium soaps. An example of this type of cake mascara formula is the following:

Stearic acid	22.0
Triethanolamine	10.0
Beeswax	68.0

The components are melted together, stirred, and strained. Pigment is stirred into the base and the mixture is milled until completely smooth. The final mixture, depending upon the color intensity of the pigment, will contain from 10 to 20 per cent of insoluble color, 1 to 2 per cent of black.

Cream mascaras, which are growing in popularity, can be either water-soluble or water-resistant. One type is very simply formulated by diluting the triethanolamine soap-wax cake with water to proper viscosity. The general composition would consist of about 15 per cent of stearic acid, 3 to 5 per cent of triethanolamine, 15 to 20 per cent of wax, 60 to 70 per cent of water, and pigments. The concentration of insoluble color will be about 2 per cent for black, 10 to 15 per cent for blue, brown, or green. Proportions and components should be adjusted to give desired application properties, but water-resistance cannot be expected. Another water-soluble, semi-liquid formulation consists simply of the pigment suspended in an aqueous solution of a natural or synthetic water-soluble gum. Gum concentration will be from 2 to 5 per cent, and a plasticizer—glycerin, sorbitol or a polyethylene glycol—must be included to make a flexible, nonflaking film. Small proportions of alcohol may be added to accelerate drying on the lashes.

Certain synthetic resins sufficiently modified to provide a flexible film, are emulsifiable in water and give water-resistant mascaras. Considerable investigation in this field is being understaken. The cream mascara that offers the greatest flexibility in formulation, however, is one consisting of waxes dissolved in a volatile solvent. The film left behind is based upon beeswax or similar wax mixtures, with pigments and modifiers where necessary. The solvent may be turpentine or an odorless mineral spirit with desirable evaporation characteristics. Beeswax, because of its plasticity, is quite good. A small amount of water included in the wax improves application and flexibility on the lashes. These are combined by making a cold-cream type, beeswax-borax emulsion containing not more than 10 per cent and preferably about 5 per cent of water. Larger amounts will excessively retard the drying of the mascara. This base is wetted with some of the solvent and color is added. Grinding is continued until the product is completely free from grittiness and the rest of the solvent is mixed into the batch to reduce the entrapment of air. With due regard for the characteristics desired of the film and application qualities previously described, a wax-solvent mascara can be developed that will be high in quality.

GLYCERINE AND SKIN BIOLOGY

(*Continued from page 174*)

They found that untreated samples absorbed about 28 per cent of their weight from an environment of 100 per cent relative humidity, and that this figure dropped to 18 per cent after the callus was extracted with water. When acetone was added to the aqueous extract, there was formed a precipitate that took up 115 per cent of its weight from a saturated environment. This precipitate does not appear to be the only, or perhaps even the major, water-binding constituent of callus, for Blank pointed out, in discussing the paper, that dried extracts of callus can absorb up to

(*Continued on page 256*)

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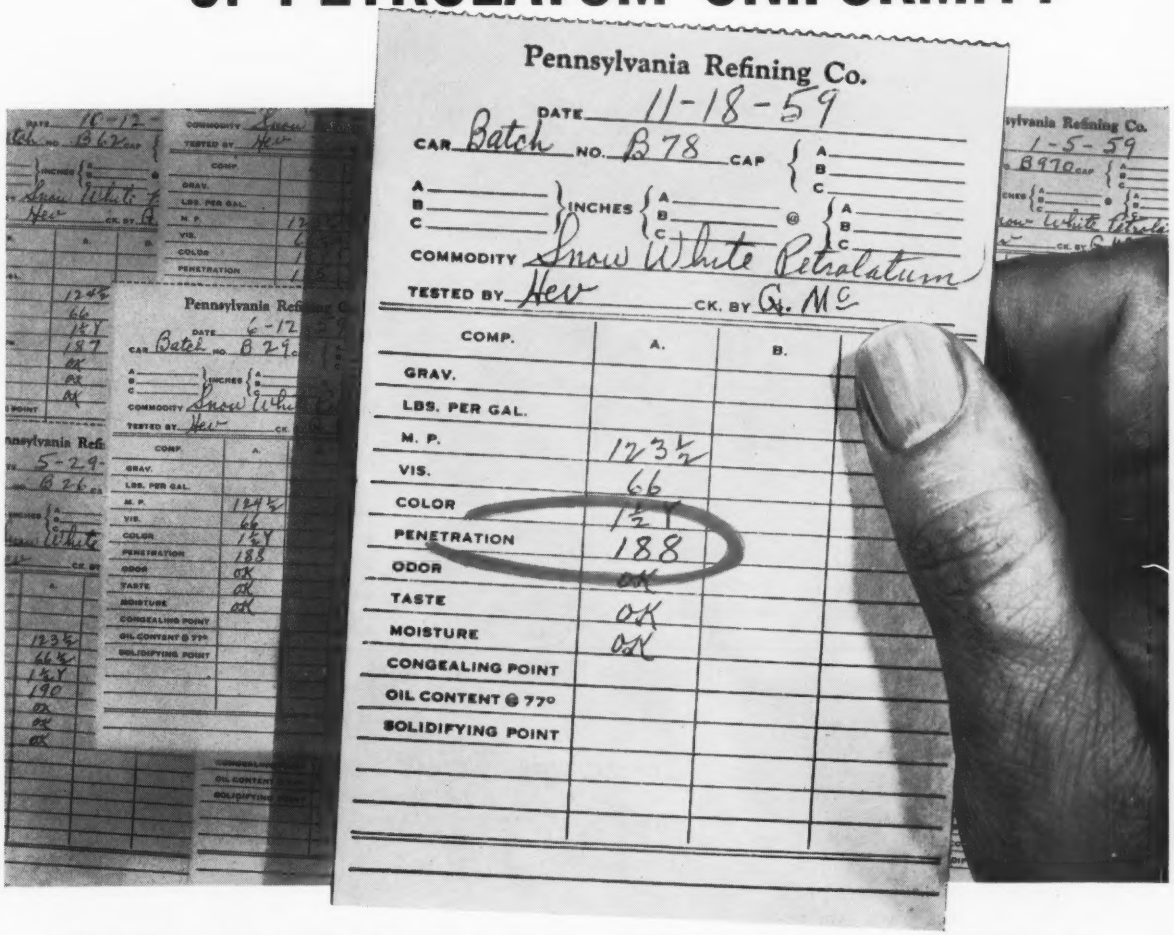

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Trade Literature

Surfactants

Geigy Industrial Chemicals Division of Geigy Chemical Corporation, P.O. Box 430, Yonkers, N. Y., has assembled information on the physical properties and end uses of its surface active agents in an eight-page bulletin. New products listed are nonylphenoxyacetic acid and lauroyl iminodiacetic acid.

Guar Gum

Stein, Hall & Co., Inc., 285 Madison Ave., New York City, has issued a booklet, Jaguar, which is a revision of an earlier publication describing Jaguar, the company's complete line of processed guar gums. The 16-page booklet contains a description of physical and chemical properties, additional facts about the line of products, types and applications, and its special services.

Diet Information

Abbott Laboratories, North Chicago, Ill., has issued for physicians a booklet, So You're Going on a Diet, to present to patients with weight control problems. Fundamental information, weight chart, sample meals, and the like are included.

Pharmaceutical and Tableting Machinery

An eight-page, three-color general catalog (Ac-61) covering the complete line of Colton pharmaceutical and tableting equipment is now available from Arthur Colton Company, 3400 E. Lafayette, Detroit 7, Mich. Also included is a description of tablet press punches and dies, which the company now manufactures in its new Michigan plant.

Firmenich & Cie Laboratories

Firmenich & Cie, Geneva, Switzerland, has issued a full-color illustrated brochure describing the company's new research laboratories at the factory at La Jonction. A floor-plan is included, along with color photographs of the facilities, and descriptions of the work done.

Carbowax

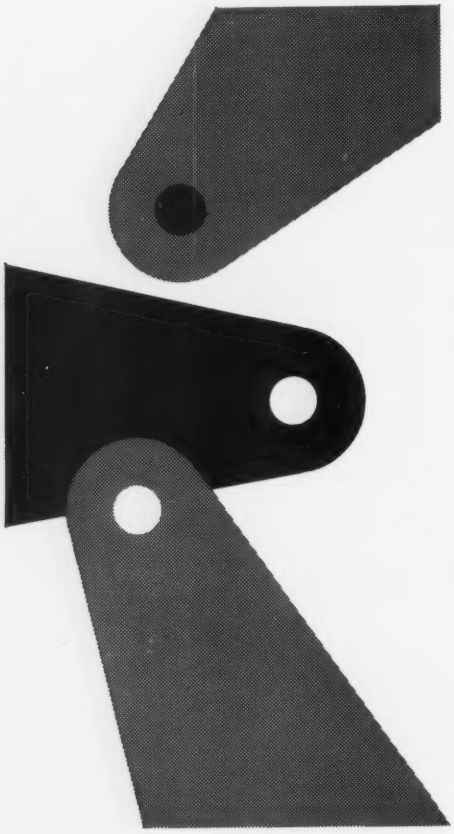
The Union Carbide Chemical Company, Division of Union Carbide Corporation, 30 East 42nd St., New York City 17, has published a 42-page brochure, Carbowax—Polyethylene Glycols for Pharmaceuticals and Cosmetics. Properties, applications, varying forms, descriptive charts, and a five-page bibliography are included.

Tablets and Capsules

The 1960 catalog of Nysco tablets and capsules has been issued by Nysco Laboratories, Inc., 34-24 Vernon Blvd., Long Island City 6, N. Y. Included are antibiotics, hard and soft capsules, capsule imprinting and sealing, gum products, narcotics, nasal insufflator, Nyscaps, powders, tablets, vitamins, and general information.

Ungerer Catalog

Ungerer & Company, 161 Avenue of the Americas, N. Y. C. 13, has published a complete catalog of its products—essential oils, aromatic chemicals, natural extractives, flavors, and specialties.



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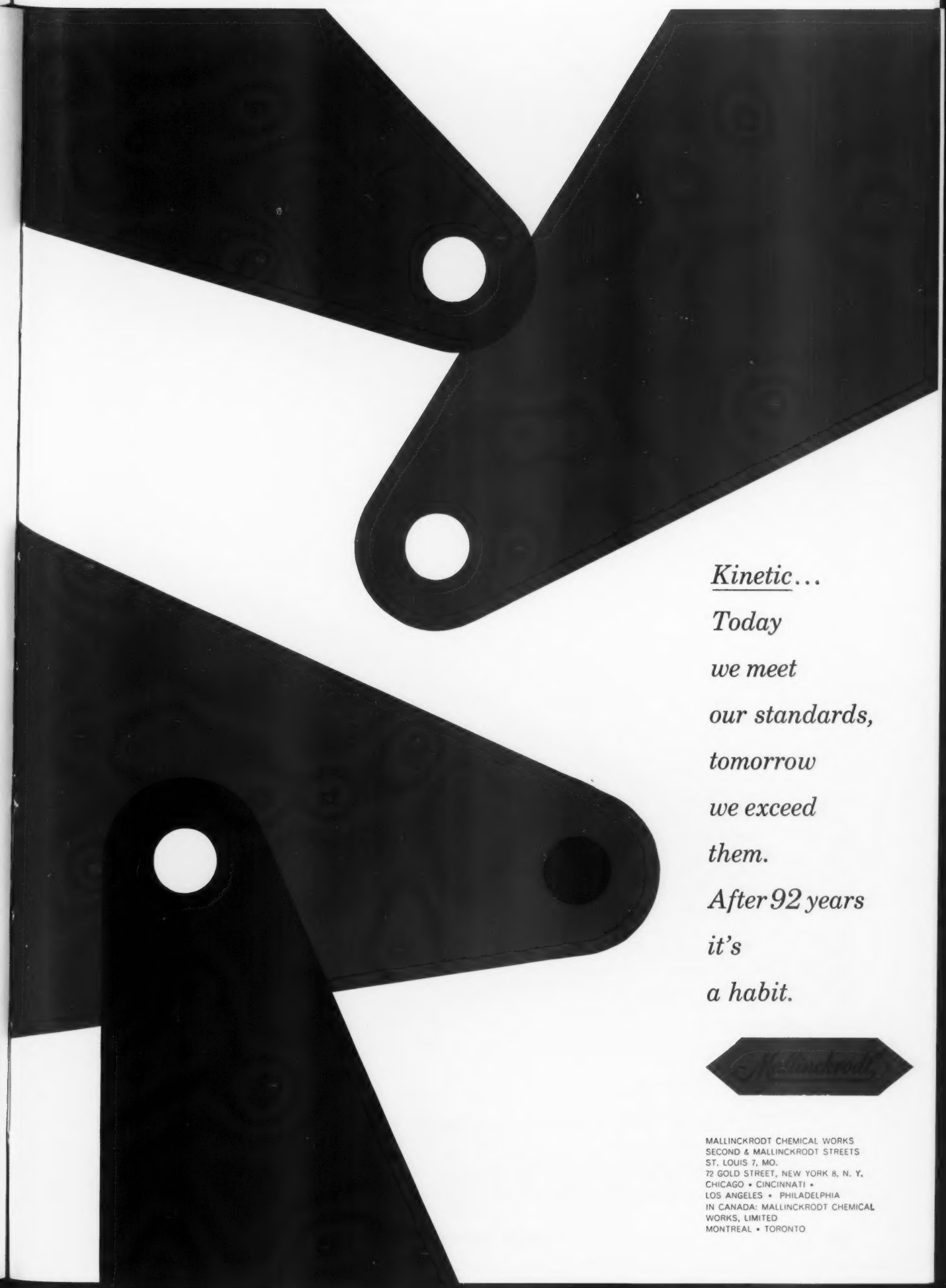

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(*Continued from page 167*)

this result with the blank obtained from 400 cc breath immediately prior to drinking the beer. The ethanol peak is seen to be extremely evident after drinking beer, and other smaller changes in the initial peaks are also visible.

A general over-all similarity is observed in the breath volatiles from a number of subjects examined. Each subject shows particularly good consistency in his own pattern of volatiles, though changes are readily seen after smoking, eating, and drinking. The so-called blank pattern itself may change from day to day for these very reasons.

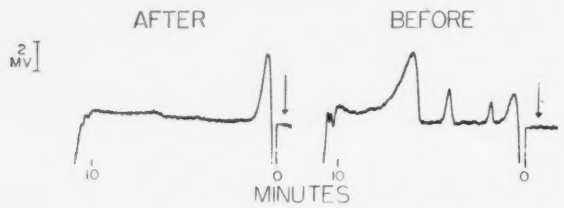


Figure 7. Effect of cleaning teeth. One hundred cc/minute argon; 2000 volts; four-foot column, 10 per cent DDP on firebrick; 22° C.

Figure 7 shows the blank pattern for another male subject and the reduction on the pattern brought about by brushing the teeth with unflavored calcium carbonate. This would indicate that the volatiles seen under these conditions arise in large part from food debris or plaque on teeth. The result of chewing a deodorant candy mint, based on a copper gluconate formulation, which is known from previous sensory panel studies to be effective,[6] produces a similar effect, as shown by the volatile patterns presented in Figure 8. In both cases (Figures 7 and 8), the "before" pattern was obtained again about two hours subsequent to the experiment. Incidentally, the matter of the origin of breath volatiles has received attention, and lung and oral sources of breath are in the course of examination.

It should be noted in both Figures 7 and 8 that much more water than usual is contained in these samples and that the double peak just ahead of the negative water peak appears to be two components that have been displaced by the water and are hence eluted earlier than usual. At these low levels, phenomena of this type are not uncommonly encountered. For a similar reason, the first positive peak following the negative air peak has to be discounted,

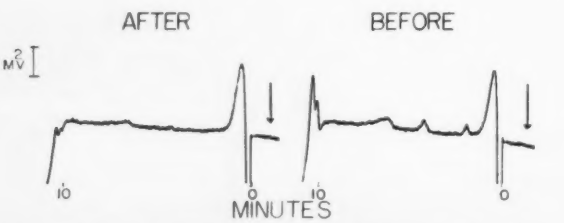


Figure 8. Effect of deodorant candy. Conditions as in Figure 7.

since its source may lie entirely in the reaction of the column to a large volume of air.

Unfortunately, the more involved the technique in obtaining breath volatile patterns (the term "patterns" is used in preference to "chromatograms" in view of the wide divergence from chromatographic principles that can occur) the greater will be the chance for entrance of artifacts or misleading information. Thus a test for diabetes which might depend on acetone, or the drunkometer test for alcohol could be made with greater reliability if less reliance on technique were needed. For this reason, any increase in the detector sensitivity which concomitantly reduces the required sample volume is worthy of serious study.

Replacement of the standard radium sources with both strontium 90 and tritium has been carried out. Results, which have bearing only when considered in relation to the geometry of this particular detector, show that strontium 90 gives curves with less background noise but without much changed response to eluted components, whereas tritium gives greatly increased sensitivity. This increase was not obtained in the other commercially available detector presumably because of less favorable geometry for the extremely weak ionizing radiations from tritium.

With tritium, it was possible to revert to direct sampling and show differences in breath volatiles as a consequence of smoking. Figure 9 shows the pattern

(*Continued on page 252*)

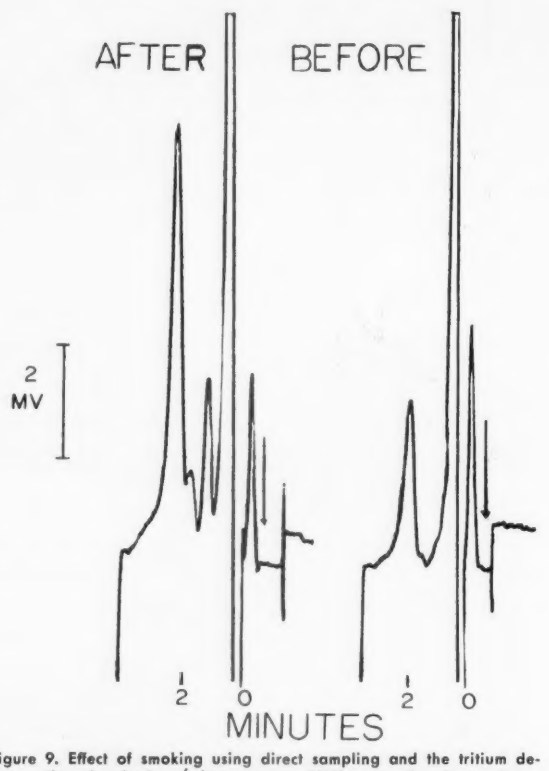
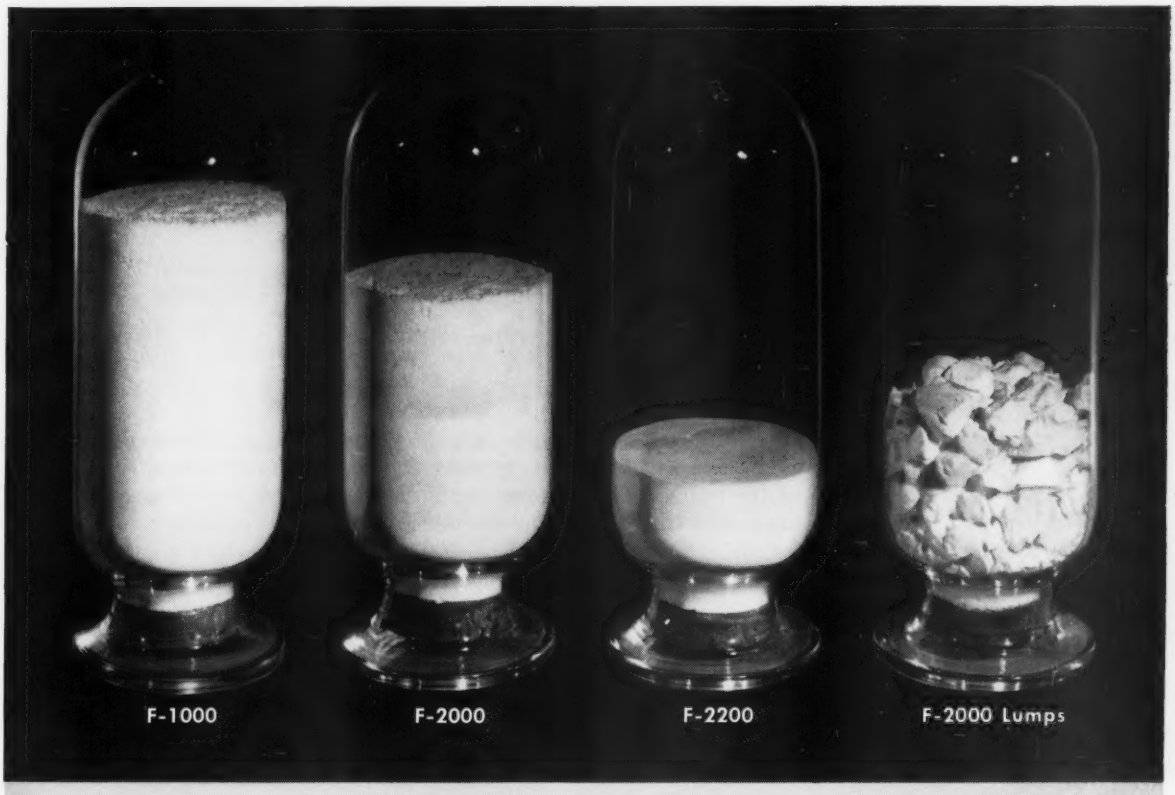


Figure 9. Effect of smoking using direct sampling and the tritium detector. One hundred cc/minute argon; 1750 volts; four-foot column, 10 per cent LAC 446 on Chromsorb W; 25° C.

REHEIS $Al(OH)_3$ DRIED GELS



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F-2000 Lumps Eliminates time-consuming, costly granulation. Dry handling permits wider range of use, even in incompatible formulations.

	F-1000	F-2000	F-2200	F-2000 Lumps
Packing Density (av.)				
Grams per cc	.13	.17	.44	.25
cc. per gram	8	6	2¼	4
Lbs./cu. ft.	8	10.5	27.5	16.5
Standard Packing	35 lbs.	50 lbs.	125 lbs.	75 lbs.

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(*Continued from page 250*)

before and after smoking. Several breaths subsequent to inhalation were taken before the breath was sampled, so residual smoke does not cause the difference. Both inhaled and exhaled smoke contain vastly greater organic contents than shown here, and direct sampling using radium and as little as 1 cc of exhaled breath will reveal 40 or more components.[2]

The increased sensitivity of tritium in this detector to breath volatiles is not without its accompanying problems, however, since increased sensitivity to column bleed and breakdown and to water is also obtained. In trying for even lower detectable amounts of breath volatiles, the enrichment column technique was used with the detector containing tritium. More peaks were revealed, but the base line sloped badly during the elution of water and had to be constantly readjusted to be kept on scale. Figure 10 shows the result of the combined tritium-enrichment column technique, after redrawing for presentation purposes. The dashed peak was eluted in the course of a very large negative peak due to water. It appears that this combination would be most useful for less volatile odorants, the type that might require a 100° C. separation column, for, in this case, the enrichment column would be operated at room temperature where only relatively minor amounts of water are picked up. In any case, the 100° C. separation column drives out water within a few minutes, and proper conditions for detection of the higher boiling odorants will be obtained.

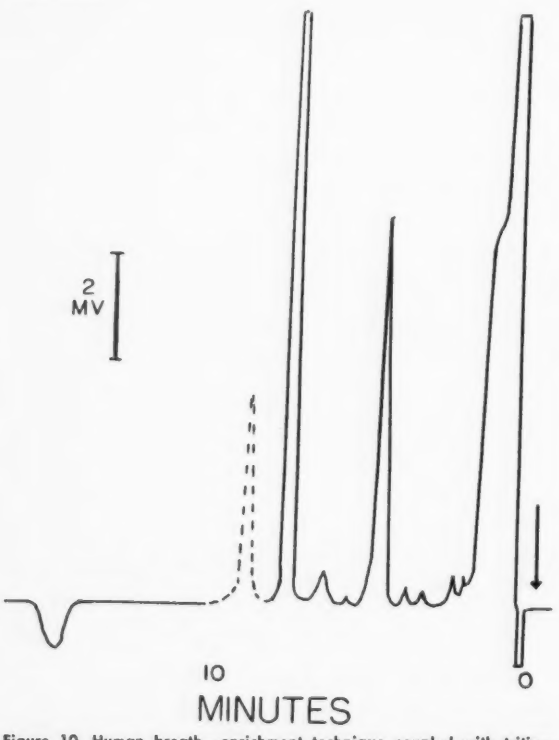


Figure 10. Human breath—enrichment technique coupled with tritium detector. Sixty cc/minute argon; 1500 volts; four-foot column, 10 per cent DDP on firebrick; 22° C.

Conclusions

The presence on the breath of organic volatiles has been clearly demonstrated by these experiments. We have earlier reported[2] the use of the direct sampling technique to show the presence of ethanol on the breath after drinking whiskey and the later occurrence of ethanol in the volatiles from urine one hour after taking the whiskey, but the enrichment column technique has opened up a wide new field in the detection of volatiles on breath at far lower levels.

This type of trace analysis should have many important applications. In medicine, the assay of acetone on the breath could readily be performed on a quick routine basis. It has been estimated that over 100,000 diabetics remain undiagnosed in the U.S.A., and that these are sorely in need of treatment.

In the forensic branch of medicine, the much debated tests for alcohol in blood or for permanganate-reducing substances on breath could be replaced by specific tests for ethanol with the recognition that substances like ethanol and acetone may be common, if not normal, constituents of breath. Ethanol may even be a normal metabolite of the human organism. On the other hand, pleas based on the defendant's diabetes or on his consumption of onions (since, according to one successful lawyer,[7] both are sources of permanganate-reducing substances) would have the benefit of critical examination.

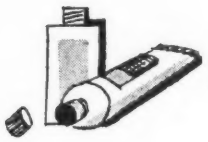
The cosmetic chemist will be able to establish the effectiveness of oral and other deodorants and to determine, perhaps, the modes of action of masking, neutralizing, and absorbent types of deodorants. Even the entomological chemist, knowing that certain compounds in breath[8] attract mosquitoes, will have new avenues of research opened to him in his search for understanding of the attractant and repellant properties of substances.

More important, perhaps, the physiologists working on nerve stimulation by odorants will be able to measure objectively that which is measured now either subjectively or by neuron release, and even suggest a correlation between these measurements. Perhaps, too, they may be able to extend Moncrieff's experiments[9] and determine any change in composition caused by passing odorants over the nasal receptors.

Up to now, the interpretation of the sense of smell has been grievously hampered by lack of objective methods which can match the nose in either sensitivity or selectivity. It seems fair to say that the unaided ionization detector is probably as sensitive as the nose for many common organic compounds, more sensitive than the nose for nonpolar hydrocarbon type substances, and less sensitive for the class of chemicals considered to be odorants.

Now, the ability to handle large air samples has probably brought the machine up to or beyond the nose for all substances. However, the selectivity of

(*Continued on page 264*)



Advancing Therapy

Diet Calories

You take in calories as food, you use up calories as your normal physical activity or your added activity in various forms of exercise. Subtract output of calories from input and the result is either a deficit or an excess. With a deficit, tissue weight will be lost; with excess, tissue weight will increase. If the electrolyte balance and kidney function remain in the normal range, so that water is neither accumulated nor lost, calorie balance should be directly translatable into weight gain or weight loss.

Calorie input consists of about 4 calories for every gram of carbohydrate or protein consumed, 9 calories for every gram of fat, 7 calories for each gram of alcohol (a two ounce martini comes to about 135 calories, more if extra dry, while a 12 ounce glass of beer at 7 per cent alcohol, is equivalent to 175 calories, not counting carbohydrates that may be present). Conservation of energy says these thermal units must be accounted for and major errors probably exist in the interpretation of the utilization of calories. Nevertheless, as a first approximation, it should be possible to translate caloric balance as specific weight gain or loss. Assuming water content remaining the same, a deficiency of calories will result in loss of weight. If the weight loss comes from the consumption only of excess fat, then theoretically a deficiency of 4050 calories will lead to a loss of 450 grams or one pound of fat. This same number of calories will also be equivalent to about 1,000 grams or 2.2 pounds of carbohydrate or protein. Choice of tissue component being consumed depends upon the availability of fat or carbohydrate or protein and also on whether hormones and other influences are causing anabolic (tissue build-up) or catabolic (tissue breakdown) effects. These figures should be equally useful in reverse where the intent is to increase weight.

These numerical calorie doodlings must only be considered against a normal physiological background in which the necessary intake of essential amino acids, vitamins, and minerals is observed. With due care for these factors, however, a reasonably specific story might be built around a specific dietary recommendation. KALISH

Paromomycin

Paromomycin is a broad-spectrum, water-soluble, basic antibiotic obtained from culture filtrates of a strain of *Streptomyces* that closely resembles *Streptomyces rimosus* NRRL 2234 according to G. L. Coffey et al (*Antibiotics and Chemother.* 9: 730, 1959). Subcutaneous administration of this antibiotic proved effective in experimental bacterial infections with strains of *Escherichia*, *Klebsiella*, *Paracolobactrum*, *Proteus*, *Shigella*, and *Staphylococcus*, and oral administration was effective in protozoal infections with *Entamoeba* and *Trichomonas*. Paromomycin was well tolerated by laboratory animals. Toxicity was observed only following the parenteral administration of high dosages, and this was limited to the kidneys. Paromomycin is apparently poorly absorbed from the intestine, as shown by low and transient blood titers and high fecal values. Although only a small part of the oral dose is recoverable in the urine, high drug-urine levels are obtained. The fortunate combination of high antiamebic and antibacterial activity and low oral toxicity makes paromomycin unique among the available drugs and suggests that it should be a useful therapeutic substance.

Andro-stanazole

Andro-stanazole (17β-hydroxy-17α-methylandrostano[3,2-c] pyrazole) has been evaluated by A. Arnold, A. L. Beyler, and G. O. Potts (*Proc. Soc. Exptl. Biol. Med.* 102: 184, 1959) for its nitrogen-retaining and androgenic activities in castrated male rats. Orally, it appears to be 30 times more anabolic and 1/4 as androgenic as methyltestosterone. Parenterally, it appears to be 1/20 as anabolic and 1/40 as androgenic as testosterone propionate. Androstanazole is clearly an agent which merits further investigation for oral administration to patients under conditions where maximum anabolic action with minimum androgenic side effects is desired.

Guanethidine Hypotensive

25 hypertensive patients have been treated with 2-per-hydrazocin-1'-ylethylguanidinium sulfate ('Ismelin,' guanethidine) by mouth for 3-11 weeks by A. W. D. Leishman, H. L. Mathews, and A. J. Smith (*The Lancet* 1959 II: 1046). 6 of these patients received hydrochlorothiazide in addition.

The blood-pressure fell in all but 1 of the patients. The hypotensive effect is long-continued and predominantly postural. In 18 cases the blood-pressure is now considered to be satisfactorily controlled.

Symptoms of severe hypotension as well as side-effects were common early in the trial, when guanethidine was often given in doses exceeding 60 mg. daily. Side-effects ceased to be troublesome when treatment was started with 10 or 20 mg. guanthidine daily, the dose being subsequently increased by not more than 10 mg. at weekly intervals.

The hypotensive action of guanethidine appears to be due to selective blockade of the sympathetic nervous system. In this respect its action resembles that of bretylium tosylate, although chemically the two drugs are unrelated.

Guanethidine is an effective hypotensive drug which reduces blood-pressure by progressive stages. It is easy to administer, and the trial has shown that, with suitable precautions, it can be employed in the treatment of hypertensive patients.

(*Continued from page 246*)

several times their own weight of water.

Jacobi (1949) was led to an intensive investigation of this problem by his observation that removal of the lipids and water-soluble components from the stratum corneum decreases the wettability of the skin. It is stated that keratin thus prepared is actually repellent to liquid water, although it retains some capacity to absorb water vapor. He has also reviewed studies (1959) dealing with a "natural moisturizing factor," and suggests that this complex of materials enables the stratum corneum to retain water, and thus to remain flexible, under conditions of low humidity that would otherwise cause it to become dry and brittle very rapidly.

Three references to glycerine occur in the papers just described. Peck (1956) found that anhydrous glycerine did not soften dry stratum corneum; this result, while not unexpected, bears no relation to the effects that might occur with glycerine at levels commonly used in cosmetics. Somewhat similarly, Shelmire (1956) observed that the addition of water-miscible compounds (including glycerine) to oil-in-water emulsions increased the rate at which sheets of callus dried out on exposure to an environment of relatively low humidity. Blank (1955), on the other hand, showed that the addition of glycerine to dried specimens of callus increased the water uptake by the sample, but the total figure was only the summation of the amounts of water absorbed by the callus and the glycerine individually. However, sheets of callus covered with a film of glycerine seem more flexible than do those without glycerine.

Summary

When the various kinds of evidence are brought together, it is possible to construct an integrated but over-simplified picture of the relationship of the skin to its environment, with special reference to its water economy. The stratum corneum is separated from the underlying epidermis and dermis by an effective "barrier membrane," that restricts the rate of transfer of water outward to the cornified epithelium. This tissue requires a certain minimum water content in order to retain its softness and flexibility, and it is to a considerable extent at the mercy of its external environment. The stratum corneum does, however, contain a material, probably a mixture of at least several compounds, that is capable of holding considerable quantities of water; this material aids directly in keeping the skin surface pliable, and it may also act as a reservoir to supply water to the true keratin of the stratum corneum. Keratin from which the lipids and water-soluble components have been removed loses its water rapidly when the humidity falls below a certain point; a transfer of water from other components to keratin under these conditions seems not only helpful but plausible.

The role that glycerine, and other cosmetic ingredients for that matter, can play in this important phenomenon is still unknown. There are few relevant reports in the literature, and these have dealt with only the simplest systems. Methods have been described, and there are sure to be others developed, which will be very useful in further exploration of this problem. It seems very likely that glycerine exerts its beneficial effect on the skin, at least in part, as a result of its participation in the kinds of biological mechanisms described here; the nature of its contribution remains to be clarified. The door is wide open for those who would know more about the part that cosmetic components and finished products may play in helping the skin to serve one of its useful and desirable functions.

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SUPPLIERS' PERFORMANCE

(*Continued from page 179*)

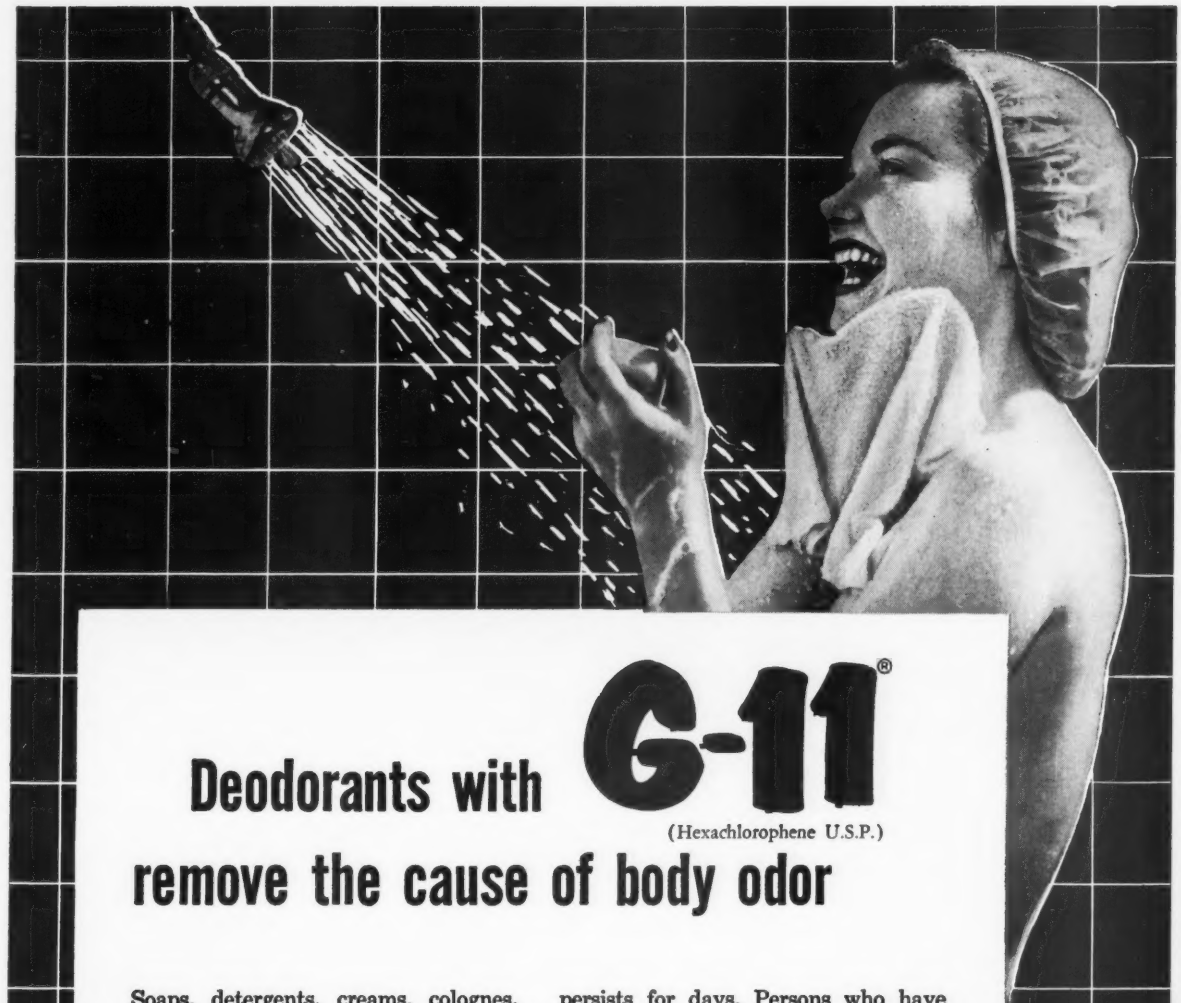
(7) Transportation delay—vendor's error, due, for instance, to a vendor trucking his shipment, although advised to air freight.

(8) Vendor delay—his fault, due to poor planning, faulty scheduling, failure to order raw materials on time, or being overloaded. (This category has been the most common.)

A vendor's delay is accorded leniency if he is able to forewarn the company of it. Since the system was set up to improve Lehn & Fink's ability to schedule delivery of goods, such forewarning often enables the company to readjust its scheduling. For example, a supplier may tell the company it can avoid wastage and save 6 per cent on a particular bottle cap if the company will wait for a better-sized plate.

Every incoming order at both the Bloomfield, N. J., and the Lincoln, Ill., plants of Lehn & Fink is scored according to whether it is on time, early, or late, and also as to quality. This part of the system requires

(*Continued on page 273*)



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Skin Research

Keratinization

Normal and pathological human epidermis has been subjected by A. Jarrett, R. I. Spearman, and J. A. Hardy (*Brit. J. Dermatol.* 71: 277, 1959) to a series of histochemical, fluorochrome and enzyme processes, in an attempt to study some of the aspects of keratinization.

There is evidence of a high energy system in the region of the granular layer of normal human skin, and that this is responsible for the synthesis of the keratin molecules from the cytoplasmic polypeptides of the epidermal cells. The oxidation of cysteine to the disulfide amino-acid cystine is an exothermic reaction and Ellis *et al.* suggested that instead of this conversion requiring external energy it was actually capable of making a contribution to the system.

Sulfydryl groups, phospholipids and glycogen are concentrated in the granular layer and they are all absent in the immediately overlying keratin. The intense staining reaction for sulfydryl groups is probably due to the unfolding of the polypeptide chains of the cytoplasm, thus increasing the number of reacting sulfydryl groups. Higher up in the epidermis these unfolded chains are broken down and resynthesized into the keratin molecule.

Phospholipids are probably formed at the time of nuclear breakdown. If the nucleotide, cytidine triphosphate, were liberated from the nuclei, it could be used in the formation of phospholipids. This compound combines with phosphoryl choline to form a diphosphate complex which in turn reacts with a diglyceride to form lecithin and cytidine monophosphate. Phospholipids can be utilized as a source of phosphate in the reformation of the high energy phosphate bonds in the adenosine triphosphate enzyme system. It has been shown that there is a breakdown of phospholipids during keratinization and these compounds disappear immediately above the granular layer. The presence of glycogen in this site indicates that this compound may be used as a source of energy.

When we compare normal human epidermal keratin with parakeratotic or rodent tail keratin, both of which are formed without a granular layer, we find that there are interesting histochemical differences. In parakeratotic and rat tail keratin there are disulfide bonds and it appears that external energy is not required for their formation. These also have a higher concentration of sulfydryl groups than normal epidermal keratin, which may be due to the incomplete breakdown and resynthesis of the unfolded polypeptide chains of the epidermal cytoplasm. The high content of phospholipids in parakeratotic keratin is evidence of incomplete utilization of the high energy system: this results in the formation of a keratin that is not highly polymerized and is therefore physically different from normal epidermal keratin. Its water content is probably also greater and these factors might account for the lack of adhesion of parakeratotic scales.

It appears that keratinization is not simply the formation of bonds between preformed polypeptide chains already present in epidermal cell protoplasm. It is more likely that at first there is an active breakdown and resynthesis of these chains which are then highly polymerized. All these alterations apparently take place in the region of the granular layer. Interference with this mechanism at any level results in the production of an abnormal keratin. Thus abnormalities of epidermal proteins, abnormal rates of epidermal growth, or enzymatic deficiencies may all cause the production of altered keratin. Parakeratotic keratin seems to result from a greatly increased rate of epidermal cell proliferation and because of this there is insufficient time for nuclear breakdown, or for the breakdown and resynthesis of the polypeptides. Epidermal proliferation is probably more important in the production of psoriatic parakeratosis than any specific enzyme defect.

Another point of interest revealed by the study of parakeratosis is the independence of the sulfydryl and disulfide contents of keratin. Although sulfydryl groups are used in the formation of disulfide bonds they do not necessarily bear a reciprocal relationship to each other. In parakeratotic keratin it is quite possible to have a high sulfydryl content together with a high disulfide content. The high sulfydryl content is due to the presence of unfolded polypeptide chains that have not been resynthesized into the more highly polymerized molecule of normal keratin.

The physical durability and chemical stability of keratins depend on two main factors, the linkages between the polypeptide chains and the degree of polymerization of the chains. These two factors may be dissociated and a durable keratin can be produced by a high content of disulfide bonds, as in human hair. Conversely, normal epidermal keratin has fewer disulfide linkages, but its stability and pliability is probably due to a high degree of polymerization.

Inner root sheath keratin has a different chemical constitution from

normal epidermal keratin: it is thought to be formed by pressure on the epidermal cells of hair follicles. It is accordingly produced without the intervention of a granular layer and although the nuclei are morphologically destroyed, the nuclear proteins both of the cytoplasm and nuclei are not broken down completely but are incorporated into the keratin molecule.

This type of keratin appears to be very similar both in its formation and chemical constitution to that formed by pressure on the lower parts of a benign epidermis invading the dermis; both have nucleic acids and a high phospholipid content. It appears from these observations that pressure alone is sufficient to initiate keratinization of epidermal cells. This keratin contains most of the original contents of the cell. We know that phospholipids are rapidly formed as a result of pressure. Their formation appears to follow the disruption of the nuclei and these complex lipids are perhaps formed by way of the nucleotide cytidine triphosphate, which is liberated into the cytoplasm as a result of damage to the nucleus. It is possible that pressure causes the death of the cells, followed by the formation of disulfide linkages across the polypeptide chains. This does not require an enzyme system and can occur without external energy. Other cell constituents are incorporated into the molecule: thus the nuclear proteins become an integral part of the keratin molecule and this nucleic acid content is one of its main distinguishing features from normal epidermal keratin.

This concept of pressure keratinization has been verified by animal experiments. It was shown that external pressure on rat's tail skin caused the deeper epidermal cells to keratinize. As a result of prolonged pressure, the whole thickness of the epidermis became keratinized and this was found to be similar to inner root sheath keratin in that it contained nucleic acids and had similar fluorescence characteristics. We have also demonstrated that deep pressure applied by dermal injection of low melting point wax caused a great increase in the amount of inner root sheath keratin in hair follicles. These findings confirm the view that epidermal cells can undergo keratinization from pressure alone and that this is the probable mechanism of the formation of inner root sheath keratin.

Chromatography of Hair

It seems virtually certain according to N. A. Barnicot (*Brit. J. Dermatol.* 71: 303, 1959) that the amino-acids which can be extracted chromatographically from the hair follicle must be present in the free state. The possibility that some spots represent peptides has not, however, been eliminated. Some of the amino-acids identified from hair follicles seem, in fact, to be widely distributed tissue constituents as may be seen from the data on the free amino-acids of various tissues summarized by Meister.

The failure to demonstrate dopa, a well-established melanin precursor, in active pigment-forming follicles presumably means that this and later intermediates do not accumulate to a detectable extent but are rapidly removed as insoluble polymer. The negative results for tryptophane derivatives do not exclude the possibility that these are involved in the formation of certain hair pigments.

There are several notable differences in the amino-acid patterns obtained from hair follicles and from mature hair. The follicles yield taurine and glutamine as strong spots and small amounts of ethanolamine phosphate, but these are not found in hair extracts, while the latter always contain tyrosine and usually threonine and citrulline which were not detected in the follicles. The hair extracts also contain relatively more serine and perhaps small amount of cystine derivatives.

The possibility that the amino-acids in hair extracts may be contaminants derived from sweat presents a difficulty.

Although contamination cannot be decisively eliminated as a possibility, it seems likely that much of the extractable material in the hair shaft is a residue incorporated in the shaft when the cells undergo the changes of keratinization. If it can be assumed that the extraction procedure is efficient, it appears, judging by the weights of material taken and the intensity of the spots, that the amino-acids of the shaft are present in much lower concentrations than they are in the active follicles.

The apparent individual variations in hair extract patterns might repay more detailed study. Only small amounts of hair have been used in these experiments since quantities of this order are most readily obtainable, but extracts of larger amounts could be suitably fractioned for the detection of substances present in higher dilution and there is also scope for the study of other groups of compounds.

Rubefacients

The mechanism of action of rubefacients, especially the esters of nicotinic acid, has been investigated by G. P. Fulton, E. M. Farber, and A. P. Moreci (*J. Invest. Dermatol.* 33: 317, 1959) by use of the cheek pouch of the hamster for study of response of the microcirculation.

Vasodilation was produced consistently by ethyl, methyl, n-hexyl and tetrahydrofurfuryl esters of nicotinic acid applied topically to the walls of arterioles from micropipettes in concentrations ranging from 100 per cent to 0.1 per cent for those soluble in mammalian Ringer's solution. Essential oils such as mustard, wintergreen, clove and camphor also produced vasodilation.

In a few instances, sharply localized vaso-constriction was obtained especially with higher concentrations.

The blood vessels participating in the response were arterioles and precapillary arteriolar sphincters. Capillaries and non-muscular venules did not react to rubefacients.

Although histamine produced vasodilation when applied topically by micropipette, hypothetical tissue injury substances do not seem to afford a necessary or logical explanation for the erythematous effect of dilute aqueous solutions of ethyl nicotinate.

The characteristics of the vasodilator responses suggest a nerve conduction mechanism. For example, the prompt, extensive uniform reaction involving a greater portion of the vessel wall than that exposed to the rubefacient implicate the perivascular nerve plexus. Treatment of the cheek pouch with xylocaine abolished the vascodilator response to rubefacients in 50 per cent of the experiments.

Sporostacin (Ortho Pharmaceutical) is a vaginal cream containing a potent monilicide, chlordantoin.

COMING EVENTS . . . . .

FEBRUARY

15-16 **Pharmaceutical Manufacturers Assn.,** western regional meeting, Ambassador Hotel, Los Angeles, Calif. (Dr. J. O'Neill Closs, 1411 K Street, N.W., Washington 5, D. C.)

25-27 **Symposium on Fundamental Cancer Research,** Univ. of Texas, Houston, Texas (Univ. of Texas, M.D. Anderson Hospital and Tumor Institute, Houston 5, Texas)

26-27 **Pharmaceutical Manufacturing Assn.,** traffic workshop during Drug and Toilet Preparation Traffic Conference, Biltmore Hotel, N. Y. C. (C. E. Brockman, Mallinckrodt Chemical Works, 3600 No. Second St., St. Louis 7, Mo.)

28 **American College of Allergists** (through March 5) Americana Hotel, Bal Harbour, Miami Beach, Fla. (Eloi Bauers, 2160 Rand Tower, Minneapolis 2, Minn.)

MARCH

1 **National Vitamin Foundation,** annual meeting and symposium—Chronic Alcoholism, Hotel Pierre, N. Y. C. (Wm. Rubin, N.V.F., 149 E. 78th St., N. Y. C. 21)

2 **Society of Cosmetic Chemists,** New York Chapter, monthly meeting, Hotel New Yorker, N. Y. C. (Dr. Saul Bell, S.C.C., 2 E. 63rd St., N. Y. C.)

2-4 **Pharmaceutical Manufacturers Assn.,** Medical Section, Hollywood Beach Hotel, Hollywood Fla. (Dr. Karl Bambach—see above.)

3 **Drug, Chemical and Allied Trades Association, New York Board of Trade, Inc.,** annual dinner (Helen L. Booth, D.C.A.T., One Liberty St., N. Y. C. 5)

3-4 **Federal Wholesale Druggists Assn.,** mid-year meeting, Statler-Hilton Hotel, N. Y. C.

10 **Pharmaceutical Advertising Club,** luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay, P.A.C., Suite 608, 489 5th Ave., N. Y. C.)

13-18 **National Health Council,** national health forum, Miami, Fla. (Philip E. Ryan, 1790 Broadway, N.Y.C. 19)

15-16 **American Broncho-Esaphogological Assn.,** Deauville Hotel, Miami Beach, Fla. (Dr. F. Johnson Putney, 1712 Locust St., Philadelphia 3, Penna.)

15-17 **American Laryngological, Rhinological and Otological Society,** Deauville Hotel, Miami Beach, Fla. (Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester 7, N. Y.)

18-19 **American Laryngological Assn.,** Deauville Hotel, Miami Beach, Fla. (Dr. Lyman Richards, Massachusetts Institute of Technology, Cambridge 39, Mass.)

22-23 **Pharmaceutical Manufacturers Assn.,** Pharmaceutical Contact Section, Shoreham Hotel, Washington, D. C. (Dr. Karl Bambach—see above.)

23 **Oil Trades Assn. of New York,** Waldorf-Astoria Hotel, N. Y. C.

27-28 **American Pharmaceutical Assn.,** House of Delegates' interim meeting, Statler Hilton Hotel, Washington, D. C.

APRIL

1-2 **American Gastroenteral Assn.,** Roosevelt Hotel, New Orleans, La. (Dr. Wade Volwiler, Dept. of Medicine, University of Washington, Seattle, Wash.)

1-3 **American Society of Internal Medicine,** Mark Hopkins Hotel, San Francisco, Calif. (Robert L. Richards, 350 Post St., San Francisco 8, Calif.)

2-6 **American College of Obstetricians and Gynecologists,** Netherland Hilton Hotel, Cincinnati, Ohio (Donald F. Richardson, P. O. Box 749, Chicago 90, Ill.)

4-7 **Pharmaceutical Manufacturers Assn.,** annual meeting, Boca Raton Hotel, Boca Raton, Fla. (Dr. Karl Bambach—see above.)

4-7 **American Management Assn.,** national packaging exposition and convention (April 4-6), Convention Hall, Atlantic City, N. J. (Packaging Exposition, Clapp & Poliak, Inc., 341 Madison Ave. N. Y. C. 17)

5-14 **American Chemical Society,** spring national meeting, Cleveland, Ohio (A. T. Winstead, A.C.S., National Meetings Dept., 1155 Sixteenth St., N.W., Washington 6, D. C.)

8-9 **Society of the Plastics Industry,** western section conference, New Riviera Hotel, Palm Springs, Calif. (S.P.I., 250 Park Ave., N. Y. C. 17)

8-12 **American Dermatological Assn.,** Boca Raton Hotel, Boca Raton, Fla. (Dr. Wiley M. Sams, 308 Ingraham Bldg., Miami 32, Fla.)

11-15 **American Assn. of Immunologists,** Chicago, Ill. (Dr. Calderon Howe, Columbia University College of Physicians and Surgeons, N.Y.C. 22)

11-16 **American Society of Biological Chemists,** Chicago, Ill. (Dr. Frank W. Putnam, Dept. of Biochemistry, Univ. of Fla., Gainesville, Fla.)

14 **Pharmaceutical Advertising Club,** luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay, P.A.C. Suite 608, 489 Fifth Ave., N. Y. C.)

17-19 **Animal Health Institute,** annual meeting, Shoreham Hotel, Washington, D. C.

18-20 **Gas Chromatography Symposium,** Canisius College, Buffalo, N. Y. (Dr. Herman A. Szymanski, Canisius College, 2001 Main St., Buffalo 8, N. Y.)

KEFAUVER: ACT II

(Continued from page 160)

for the protection of the public." The trademarked drug carries the guaranty of the manufacturer of its purity and strength "which government controls alone cannot do."

He claimed that Serpasil is reasonably priced, costing the patient from $1.35 to $2.25 per month. The 25 million lower-income people treated at hospital out-patient clinics each year get Serpasil and other Ciba drugs at even lower cost.

Of the 1,371 pharmaceutical companies in this country, only 59 companies developed the 417 completely new prescription drugs made available during the ten years from 1949 through 1958. Ciba ranked tenth with 14 new drug discoveries.

Mr. Haines cited a report published in the April, 1959 Monthly Letter of the First National City Bank of New York which compares 1958 profits after taxes as a percentage of sales for 66 industries, to show the pharmaceutical industry does not realize a higher profit than other business. The five leading industries in the report are: mining and quarrying, 19.5 per cent; cement, 16.1 per cent; telephone and telegraph, 13.8 per cent; electric power and gas, 13.4 per cent; and drugs and medicines, 11.4 per cent. Saying that Ciba was not one of the 27 companies listed, Ciba's 1958 profit represented 12.8 per cent of sales, and in 1959 represented 11.9 per cent.

New uses
are still being found for

GROCO RED OILS & WHITE OLEINES

SPECIFICATION	WHITE OLEINES		RED OILS			
	GROCO 6 USP	GROCO 5L Low Linoleic	GROCO 2	GROCO 4	GROCO 8	GROCO 18
Titre	2° – 5°C.	2° – 5°C.	3°C. max.	4° – 6°C.	8° – 10°C.	18° – 20°C.
Titre	36° – 41°F.	36° – 41°F.	37.4°F. max.	39.2°–42.8°F.	46.4°–50.0°F.	64.4° – 68°F.
Color 5¼"* Lovibond Red	1 max.	1 max.	1 max.	1 max.	1 max.	2 max.
Color 5¼"* Lovibond Yellow	8 max.	8 max.	10 max.	10 max.	10 max.	15 max.
Color Gardner 1933	2 max.	2 max.	—	—	—	—
Unsaponifiable	1.0% max.	1.0% max.	1.5% max.	1.5% max.	1.5% max.	1.5% max.
Saponification Value	199 – 204	201 – 206	198 – 203	198 – 203	198 – 203	204 max.
Acid Value	198 – 203	200 – 205	197 – 202	197 – 202	197 – 202	203 max.
% F.F.A. as Oleic Acid	99.5 min.	99.5 min.	99 min.	99 min.	99 min.	99 min.
Iodine Value (WIJS)	95 max.	90 max.	95 max.	94 max.	92 max.	85 max.
Refractive Index 50°C. (Average)	1.4500	1.4490	1.4505	1.4500	1.4495	1.4485
Total Polyunsaturated Fatty Acids	—	3.5% max.	—	—	—	—
COMPONENT FATTY ACIDS						
C14 Myristic	5%	6%	4%	4%	5%	5%
C16 Palmitic	3%	2%	3%	5%	6%	10%
C18 Stearic	1%	—	1%	1%	2%	4%
C18 Oleic	82%	89%	82%	80%	77%	72%
C18 Linoleic	8%	2.5%	9%	9%	9%	8%
C18 Linolenic	1%	0.5%	1%	1%	1%	1%
MACKEY TEST: Time to reach 105°C.	over 7 hrs.	over 7 hrs.	over 4 hrs.	over 4 hrs.	over 4 hrs.	over 3 hrs.

For more information on A. Gross fatty acids, send for new edition of "Fatty Acids in Modern Industry."

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Evaluate fatty acids made by A. GROSS—send for samples of: STEARIC ACIDS • RED OILS • WHITE OLEINES • TALLOW FATTY ACIDS • COCONUT FATTY ACIDS • VEGETABLE FATTY ACIDS • HYDROGENATED FATTY ACIDS • HYDROGENATED GLYCERIDES

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ROUGES

MASCARAS

&

LIQUID & CREME

FOUNDATIONS

LOTIONS

CREMES

Inquiries Invited

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Readers' Questions . . .

Flavoring Pharmaceuticals: *I know you have covered the subject from a number of different points of view, in articles and in short notes, but could you lay down a general procedure to be followed in flavoring an unpleasant tasting medicinal mixture.* LOS ANGELES

Not too surprisingly, the first requirement in undertaking a flavoring project, is a very extensive selection of flavor samples. These should include a few of the natural oils or flavor chemicals for special applications, but finished compounds will by-pass future inventory and uniformity problems. Date the flavors as you get them, to guard against deterioration with age. The unpleasant taste is most often a bitterness, but it may be salty, burnt, astringent, metallic; after you have made the first tentative classification along these lines, you can select a flavor type that past experience has shown will have some usefulness. Use the smallest quantity that seems to do the job, since overflavoring, and especially oversweetening, may introduce its own problems. Actually, before adding any flavor, be sure that the product is a close approximation of the one finally to be marketed, including the sugar syrup, sorbitol solution, glycol solvents, and other components that may in themselves affect the taste. Sweetness, for instance, sometimes tends to counteract bitterness while some consumers may sense bitterness from otherwise small proportions of artificial sweeteners. As melon fanciers know, traces of salt may enhance sweetness. Taste fatigue will set in quickly; not too much tasting can be undertaken at one session. Once the best possible suppression and masking of unpleasant taste has been accomplished, efforts should be concentrated on the development of a pleasant one. At this point it might be well to involve those most directly concerned in selling and promoting the preparation in the selection of flavor. If they can be made enthusiastic, the product will be presented to the consumer that much more favorably. Only at this final stage in the development will any important purpose be served by checking with either a small expert panel, or a large consumer group.

MEDICINAL, PHARMACEUTICAL AND VITAMIN FLAVORS

by Florasynth

We maintain a special laboratory for research and development of flavors for use by the pharmaceutical industry including the development of appropriate flavors suitable for specific individual preparations...

WE LIST HEREIN FLAVORS OF SPECIAL CHARACTERISTICS WHICH HAVE RECEIVED WIDE ACCEPTANCE:

SPECIAL LIQUID FLAVORS

	SUGGESTED USAGE TO 1 GALLON SYRUP
Caramellone Syntharome Imit. Butterscotch Flavor	1/4 to 1/2 oz.
Concentrated Imitation Butterscotch Flavor	2 ozs.
Concentrated Imitation Caramel Flavor	1 oz.
Imitation Tame Cherry Flavor 2:1	2 ozs.
Syntharome Imit. Wild Cherry Flavor Special	1/4 to 1/2 oz.
Imitation Wild Cherry Flavor 2:1	2 ozs.
Imitation Chocolate Aroma Flavor	2 ozs.
Cola Type Flavor 1:1	1/2 to 1 oz.
Cola Type Flavor 4:1	4 ozs.
Concentrated Lemon-Lime Flavor	1/4 to 1/2 oz.
Licorice Type Flavor 1:1	1/2 to 1 oz.
Syntharome Imitation Maplenut Flavor	1/2 oz.
Syntharome Imitation Raspberry Flavor	1/4 to 1/2 oz.
Syntharome Imit. Tutti-Frutti Flavor	1/4 to 1/2 oz.
Imitation Tutti-Frutti Flavor 2:1	2 ozs.
Imitation Rum and Butter Flavor	1/2 oz.

The indicated usages to the gallon of syrup are mentioned purely as indications for test evaluation work in manufacturer's own formulations.

ENTRAPPED POWDERED FLAVORS

Florasynth being one of the first companies to manufacture powdered flavoring materials, we list below descriptive details of what we feel to be the finest type of New Entrapped Powdered Flavors. Features of these New Entrapped Powders are (1) as high as 50% oil content by weight. (2) Instantly dispersable. (3) Non-hygroscopic. (4) Extremely economical. Shelf life studies have indicated excellent results.

	SUGGESTED USAGE TO 100 LBS.
Apple Imitation	2 to 4 oz.
Banana Imitation	2 to 4 oz.
Cherry Imitation	2 to 4 oz.
Cola Type	2 to 4 oz.
Grape Imitation	2 to 4 oz.
Lemon	2 to 4 oz.
Lemon-Lime	2 to 4 oz.
Lime	2 to 4 oz.
Loganberry Imitation	2 to 4 oz.
Maple Imitation	2 to 4 oz.
Orange	2 to 4 oz.
Pineapple Imitation	2 to 4 oz.
Raspberry Imitation	2 to 4 oz.
Root Beer	2 to 4 oz.
Strawberry Imitation	2 to 4 oz.
Tutti-Frutti Imitation	2 to 4 oz.

Other Entrapped Flavors Developed on Request

Standard Packing: 150 lb. containers

Florasynth **LABORATORIES, INC.**

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(*Continued from page 252*)

the nose remains largely unchallenged, although, of course, the ionization detectors' lack of response to water and the fixed gases is a demonstration of selectivity.

Now, the ability to handle large air samples has probably brought the machine up to or beyond the nose for all substances. However, the selectivity of the nose remains largely unchallenged, although, of course, the ionization detectors' lack of response to water and the fixed gases is a demonstration of selectivity.

The road to increased sensitivity suggested in this communication, progressing as it has via the use of chromatographic columns for concentration purposes, may, unfortunately, have obscured the very real benefits to be obtained from the study of the interrelationships between column substrate and the odorous components absorbed on them.

For it would seem that the selectivity of the nose ought, eventually, to be describable in terms of such interrelationships. Much benefit to a physiological understanding of the sense of smell should ensue if model systems can be constructed and operated *at the extremely low concentration levels obtaining in the nose*. This restriction is important, if we are to obtain information based on absorption at interfaces rather than information, as presently offered by gas chromatography, based on solvent-solute relationships.

Lauffer[10] states regarding gas chromatography:

"Little imagination is required to see here a convenient means of obtaining a quantitative measure of attractive forces between given odorants and stationary phases of different types, possibly leading to a useful model of the olfactory receptors. Conversely, such measurements of attractive forces may make possible the effective classification of odorants by instrumental methods."

If modified by the view that phenomena occurring at the concentration level of odorants may be quite different from those at the usual gas chromatographic level, this statement assumes even greater significance. Certainly it holds out much hope for the future.

Finally, it should be recognized that the techniques and philosophies expounded here should be of value in a much wider field than breath-volatiles measurement or even odor research. The broad area of air pollution immediately comes to mind as a prime example of the problems involved in searching for extremely small amounts of unknown materials in a vast surplus of either known or unimportant materials.

Acknowledgments

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FILMCOATING

(*Continued from page 171*)

gredients comprising the Filmtab are described in U. S. Patent 2,881,085 (1959) issued to Endicott, Dallavis, and Dickinson.[15]

Among the film-forming constituents to which the invention pertains, the cellulose acetate phthalate resins are suitable for use. These include such polycarboxycylic acid partial esters of cellulose esters of lower aliphatic monocarboxycylic acids as cellulose acetate phthalate, cellulose propionate phthalate and cellulose butyrate phthalate. The water-soluble portion of the film composition may be derived from materials of the polyethylene glycol type having a waxy nature. Water-dispersible waxes that may also be used are glyceryl monostearate and glycol stearate. Plasticizing agents may be castor oil, mineral oil, corn oil, sesame oil, or propylene glycol. Some portions of drying oils such as soy bean oil may be of advantage in the finished film. Surface active agents may include polyoxyethylene sorbitan derivatives and sulfated fatty alcohols. Opaquants and colorants include the gamut of F. D. & C. and D. & C. dyes and lakes, as well as pigments such as iron oxides, titanium dioxide and ultramarine blues. Sweeteners such as cyclamate and saccharin and flavors and aromas such as vanillin are easily incorporated to increase patient product acceptance. The volatile solvent menstruum may be composed of a mixture of ethyl alcohol and acetone, as well as other alcohols and ketones. The glossant may be selected from many water-insoluble waxes, such as beeswax, stearic acid, cetyl alcohol, cocoa butter, and hydrogenated vegetable waxes.

A typical formula, as exemplified in the patent, would contain:

(*Continued on page 288*)

SILICONE NEWS from Dow Corning

Endearing and Enduring

Silicones Help Keep Her Charming ...And Keep Her Sold Too!

To enjoy continuing and repeat sales, cosmetics must beautify . . . must also have staying power . . . must endure to endear. How do you build lasting effectiveness into a formulation? With Dow Corning Silicones.

Hand creams, suntan lotions, hair sprays and many other toiletries are subject to the attrition of water. Silicones resist water . . . are among the best water-repellents known. And silicones resist oxidation, too. By incorporating water-repellent silicone fluids in your formula, you'll make creams, sprays and lotions that aren't easily washed away . . . that last longer in use. In addition, silicones keep water-borne irritants from contacting the skin — increase your product's protective qualities.

Dow Corning silicone fluids, specially developed for cosmetics, are nonsticky, nonoily. They're odorless, colorless, and do not become rancid. They spread easily, are pleasant to the touch, and leave the skin feeling soft and smooth. And, important to many formulations, silicones allow the skin to breathe. In all, they're ideal ingredients, and blend well with other materials of cosmetic formulations. Why not investigate?

Water Wash Resistance Data. The following are results obtained in tests to determine the resistance of silicone fluids to washing away. Similar silicone materials were applied to the hands of several women; the hands were then all subjected to the same controlled test conditions. Complete details of test procedures and results are available on request.

Silicone Tested	Tester	Percent Silicone Removed	
		Applied as Fluid	Applied as Emulsion
Dow Corning 200 Fluid	Subject A	4.8%	3.0%
	B	6.4%	2.8%
	C	6.6%	4.0%
	D	6.4%	2.6%
	F	3.8%	1.2%
	G	4.6%	3.0%
	Average	5.4%	2.8%
Dow Corning 555 Fluid	Subject A	0.01%	0.03%
	B	0.00%	0.03%
	D	0.01%	0.02%
	Average	0.01%	0.03%

Dow Corning research and development chemists are constantly working to develop new silicones and new cosmetic formulations containing silicones. To obtain latest and most complete technical information call our nearest branch office or write Dept. 1102.

Your nearest Dow Corning office is the number one source for information and technical service on silicones.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

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AMERCHOLS®...

for MOISTURIZING, EMOLLIENCE, EMULSIFYING

These most widely used skin moisturizers are lanolin-derived, universally compatible non-ionics with unique hydrophilic properties. The AMERCHOLS are powerful depressants of interfacial tension functioning in both O/W and W/O emulsion systems. Our exclusive process guarantees uniform high quality and dependability.

USE the AMERCHOLS for emulsion stabilization, pigment deflocculation, gloss, soft textures, lubricity, superb emollience, and above all — moisturizing effects. They are non-irritating, hypo-allergenic, safe for the most delicate tissues; and available in both liquid and solid forms.

Recommended for Creams, Lotions, Make-up, Soaps, Ointments, Aerosols, etc. for Baby, Mother, Dad and Grandma.

Write for samples, references, technical data and suggested formulas. Our products are available everywhere through our world-wide sales agents.

American Cholesterol Products, Inc.

AMERCHOL PARK . . . EDISON, N. J.

(*Continued from page 208*)

a blue trapezoidal figure with term "Delsa" and leaping antelope and a trapezoidal figure with term "Coro" and a flying horse, both for costume jewelery; "Mr. Chico" for chocolate flavored syrup for food flavoring purposes and "El Chico" or "El Chico Cafe" for a restaurant selling Spanish food; "Smokelle" for smoke-flavored cheese and "Smokene" for smoke-flavored seasoning; "Sprite" for nonalcoholic beverages and "Squirt" for grapefruit-flavored concentrate; "Ma's" for noodles, soup mixes, dumplings and the like and "Mother's" for noodles and paste products; "Sumark" for accessory items for garden hoses, faucets, and household specialty items, and "Mark" for hardware and plumbing supplies for domestic water systems; "Diasept" for antibiotic pharmaceutical preparation sold on prescription and "Diaseptic Process" for a service of cleaning, sanitizing and treating diapers; "Lever Lock" for manually operable plug type sanitary valves and "Leverlock" for gate valves sold for pipelines; "Union" with the phrase "World Wide Service" on two globes for metal tanks, and "Columbian" beneath the phrase "Tanks for the World" on a globe, for goods in part identical; "Dewpack" for fresh frozen shrimp and "Dewkist" for canned and frozen fruits and vegetables; "Acco Polymers" and "Arcc" for various resin compositions; "Admiral" for textile rugs and carpets and "Admiral" for textile rugs and carpets and "Admiral" for radios, television sets, phonographs and electric stoves; "Camco" for baling and paper-wrapping machinery, and "Clamco" for packaging equipment, fixtures and supplies; "Swanky Debs" for ladies' and misses' shoes and "Swankshirts" for men's outer shirts and "Swank" for men's belts; "Personal Blend" for shampoo and "Personal Choice" for a shave lotion; "Ameridor" for glass door and wall panels, and "Mermadoor" for shower doors; "Lady Hamilton" for stockings and "Lady Hampshire" for the same goods; "Topseal" for pre-assembled units of fasteners, washers, etc. and "Top-Side" for bolts, metal washers, clips; "Tang O' The Sea Food" and representation of a helmsman for restaurant and catering services and "Seatang" for canned, fresh and frozen seafood; "Acto-Vate" for water softener and "Acto" for petroleum sulfonate compounds having water softener properties; "Colorama" for yarns and "Rama" for cotton piece goods; "Dolain" for bromelin for industrial and medicinal uses and "Dilan" for chemical toxicants used in manufacturing agricultural insecticides; "Plasti-Krome" for extruded plastic shapes having a metal foil inlay and "Plastichrome" for postcards and calendars; "Posner's Ebonaire" for a hair treatment kit for straightening and curling kinky hair, and "Debonair" for men's toiletries sold by house-to-house salesmen; "Heliogen" for a disinfectant and the same mark as used on and registered for pigment dye-stuffs; the words "Three Monks" and a picture of three monks and the words "The

Christian Brothers," one used on brandy and the other on wine; "Safelite" for lenses for optical use and "Saf-I-Duo" and other "Saf"-combination marks for goggles, face shields and welders' helmets; "Synthamica" for electrical insulation and "Samica" for the same materials; "Raybar" for a gun sight and "Ray-Ban" for sunglasses, goggles, and shooting glasses; "Cotohna" for cotton piece goods and "Cohama" for cotton and/or silk piece goods; "Power-Pak" for a detergent composition used in dry-cleaning systems, and "Pax" for powdered soap, and "Pax-" combination marks for washing compounds and all-purpose detergents; "Rarco" for textile printing inks and "Arco" for paints; "Plantrons" for fertilizer and "Plantabbs" for an odorless fertilizer; a design mark showing a plume and thistle design and the words "Le Gant" for gloves and the word mark "Mademoiselle" for shoes; "Rapidyne" for dynamo-electric and implifying dynamoelectric generators, machines and motors, and the word "Rapid" with a robot design for selenium rectifier power supplies, controls and regulators; "E-Z Wire" for electric plugs, switches and outlets, and "SX" or "SX Wire" for electrical transformers, coils, chokes and similar products; "Slendora" superimposed over a silhouette of a slender woman, for candy, and "Slenderella" for health foods, specifically candies and for a posture correction and slenderizing service; "Geltabs" for a vitamin preparation and "Keltabs" for dried sea plant products for use as dietary supplement for iodine deficiency; "Vegetex" for colloidal emulsifier and stabilizer sold in bulk to bakeries, and "Vegelona" and other "Vege-" combinations for vegetarian food products sold over the counter; "Unipak" for an assembly of various electrical capacitors and "Unipak" for plastic bags for resinous material for electrical insulation; a composite mark comprising the words "Round-World," a globe and an eagle, for lubricating oils, and "Richfield" with an illustration of an eagle for various petroleum products; a composite mark including the words "Parking System" in an oval with "Meyers Bros." therein for the parking and storing of automobiles, and the word "System" as used in a circular design also including the words "Auto Parks" for similar services; "Newport" for cigarettes and the same word for alcoholic beverages; "Duratron" for a dust-on colorant and hardener for concrete floors, and "Duron" and "Durzon" for paints, varnishes and woodstains; "Dream Whip" for puddings and dessert topping mixes and "Cream Wipt" or "Saladream" for salad dressing; "Hycroft" for poultry hatching eggs and baby chicks, and "Hy-Line" for live poultry and for seed corn and hatching eggs; "Sew-Easy" for ready-cut doll clothes and "Sewhandy" for sewing machines and sewing machine needles; "Vari-Pac" for electric lamps and "Variac" for auto transformers; "Easytint" for paint sold to the general public and "Easy" for touch-up enamel sold to dealers in laundry appliances; "Dewy-

Vanillol Liquid*
NOVILLE

this alcohol has a fullness of odor typical of vanilla bean and Siam benzoin. Recommended for fine perfumery...

Suitability for food products has not yet been established.

Noville
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NORTH BERGEN, N. J.

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AN ASSOCIATED COMPANY

CHOLESTEROL U.S.P.

Our CHOLESTEROL is a pure white grade derived from lanolin. It is suitable for the most exacting purposes in pharmaceuticals and cosmetics.

VISCOLAN

Liquid Lanolin. Here is dewaxed lanolin in sparkling clear, golden liquid form. Chemically identical to lanolin but dramatically superior for aerosols and other cosmetic preparations. Uniformly low odor and color, excellent oil solubility. Offers all of the natural benefits of lanolin in intensified convenient liquid form.

WAXOLAN

WAXOLAN is a light cream colored natural wax derived from pure lanolin. Use it as an emollient, for gloss, grooming effects, and for stabilizing emulsions, raising m.p. and viscosity.

Write for samples, references, technical data and suggested formulas. Our products are available everywhere through our world-wide sales agents.

American Cholesterol Products, Inc.

AMERCHOL PARK . . . EDISON, N. J.

Fresh" and a design for fresh vegetables and "Dawn Fresh" for canned mushrooms and fresh asparagus; "Quaker Maid" with an illustration of a Quaker woman for ice cream, syrup, and toppings, and "Quaker Maid" with an illustration of the head and shoulders of a Quaker woman for table syrup; "Lone Star" and a star for bars and pigs of specification lead and a star with the letters "LS" therein for antimony; "Lan-O-Tress" and "Wave-Tress" for hair dressing and oil cold wave cream respectively and "Tresemme" for hair dyes; "Algimycin" with a design for algaecide for swimming pools and aquaria and "Agrimycin" for an agricultural antibiotic preparation; "Shux" for a hand cleaner and "Lux" for toilet soap and liquid detergent; "Tutu" and a drawing of a ballerina for perfumes and cosmetics, and "Tattoo" for lipsticks, soaps and cosmetics; "Magneraser" for demagnetizing magnetic recording tape and "Noiseraser" for an identical product; "Duratrim" for plastic films and coated fabrics for wall coverings and "Duratex" and other marks including the prefix "Dura" for vinyl coated fabrics; a design of an eagle and the word "Celestial" for lubricating oils and greases and various marks including representations of eagles with the word mark "Richfield" for petroleum products; "Lustrapon" for concentrated shampoo and "Lustron" for hair preparations; "Angel Touch" for household deodorant sprays and "Angel Skin" and other marks including the word "Angel" for various cosmetics; "Chef Tony" with the head of a chef and "Chef Boy-Ar-Dee," both for spaghetti sauces, etc.; "Fairy Princess' for children's cosmetics and "Fairy Princess" for a hair waving preparation; "Alaaden's Country Charm" for candy and "Charms" for the same product; "Citra" for cold capsules and cough syrup and "Citroid" for a cold remedy; "Surgi-Stat" for a dental hemostat and "Surgiset" for sutures! "Lite-Vent" for aluminum awnings and "Kool Vent" for similar goods; "Silent Power" for automobile mufflers and parts thereof and "Silentone" for similar goods; "Yankee-Frankee" for a frankfurter sandwich and "Yankee Doodles" for cake or "Yankee" for fried cakes and doughnuts; "Penguin" for cookies and "Giant Penguin" for ice cream sandwiches; "Camco" for printing machinery and "Canco" for can openers, and sheet metal containers; "Mother Bessie's" for pone bread and "Mother's Best" for flour; "Canaramic" for can openers and "Can-O-Mat" or "Can-O-Matic" for the same product; "Vifex" for coffee-flavored powdered food containing amino acids used in the preparation of a strengthening food drink, and Vitex for vitamin-D menstruums used by the dairy and bakery industries; "Pow-R-Boy" for a multiple-purpose garden implement and "Lawn-Boy" for lawn mowers; "Yardloader" for a vehicle mounted material loader and "Yardlift" for power operated fork trucks; "Ebony" for cosmetic and toilet preparations and "Ebony" for a periodical publication; "Kor-Niks" for flavored

corn chips and "Corn Kix" for a breakfast cereal; "GM-30" for gelatinized wheat starch for industrial use and "GM" for automotive products and parts thereof; "PS" for watches and a monogram comprising the letter "P" below an inverted "P" for the same products; "Wiggly Wag" for a toy dog and "Mr. Wiggle" for a coil spring toy; "Rotary" for well logging services and the same word for a fraternal organization; "Tendyl" for hypotensive composition and "Pendil" for a medicinal preparation used for preparing water-in-oil penicillin and other emulsions; "Amy Scott" for ladies' dresses and other wearing apparel and "Jeane Scott" for similar merchandise; "Royal Drene" for shampoo and "Royal Crown" for cologne, toilet, scalp and massage preparations; "Misty-Glo" for floor cleaning preparations and "Misto" for related goods; "Papa David's" for corned beef and "David Berg" for the same product; "Polymul" for polyethylene emulsions for general industrial use and "Polyco" for resin emulsions used in the preparation of adhesive fillers, plastics and other products; "Crow Wing" and a design for men's and women's work, sport and casual jackets and for jackets to be worn by the clergy, sold through mail order, and "Wings" for men's apparel; "Jubilee!" for "asphalt floor tile" and "Jubilee" for a cleaning and polishing composition; "Nebutrel" for a medicated inhalant and "Nembutal" for a hypnotic sedative anesthetic compound; "Thermorama" for wall panels on which are mounted controls for ventilating, and "Thermo" for flow control valves for refrigerating units; "Pura-Flo" for fluid filtration units and "Purolator" for a similar product; "Stat-Lins" for paper products including napkins and "Scotkins" for the same product; "Termicide" for exterminating services and "Terminix" for insecticides; "Ivy Hall" and "Ivy Loom" for neckties and "Ivy League" for men's and women's outer garments; "Gay Sprites" for children's clothing and "Gay-Kindreds" for similar merchandise; "Lillivette" for sweaters and "Lilli Ann" and "Lilli Annette" for ladies' suits, coats and dresses; "Sweetheart" for paper goods and the same word for toilet soap; "Ivy Casual" for men's and boys' shirts and pajamas and "Ivy League" for men's and women's outer garments; "Peter Pan" for aprons, rain bonnets and rain gloves and "Peter Pan" for brassiers; "Handilace" for laces in the piece and "Mandelace" with a design for similar goods; "3-Monks" for brandy and "Christian Brothers" for wine and brandy; "Hallmark" for kits for making bedspreads and "Hallmark" for greeting cards; and between "Cam-Lox" for artwork display devices and "Camloc" for industrial fasteners, latches and tools.

Cases Where Likelihood of Confusion was Found. Likelihood of confusion was found between the following: "Holiday" for men's coats, topcoats and suits, and the same word for rubber boots and shoes; "Pepco" for storage batteries and the same word for the service of supplying electrical energy; "Pro-Mat" for

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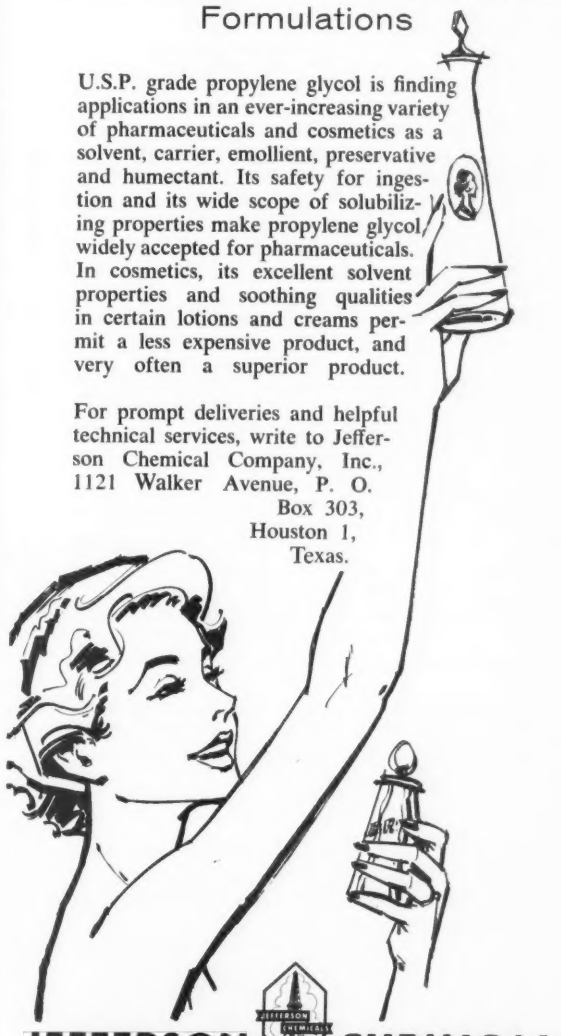

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paints and "Promat Proton" and the word "Promat" alone for composition for rust-proofiing metal surfaces; "Percmaster" for glass percolators and "Coffeemaster" for the same product; "Foodmaster" for hand operated food choppers and cutters and "Mixmaster" for electric food mixers; "Sta-Clean" for a water- and stain-repellant chemical and "Sta-Nu" for a liquid textile finishing composition; "Icy-Ade" for a flavoring powder for soft drinks and "Kool-Aid" for the same product; "Drillmaster" for drilling units and "Drillmaster" for earth-boring apparatus; "Neovital" for a dietary supplement in capsule form and "Meovite" for a a similar vitamin preparation; "Monarch" for washing machines and the same word for electric ranges, room heaters, refrigerators and similar products; "Bonnie Jonnie" for a liquid toilet bowl cleaner and "Bonnie" for laundry bluing and disinfectant; "Pyrotherm" for liquefied petroleum gases for domestic and commercial uses and "Pyrofax" for identical products; "Morlift" for industrial lift trucks and the same word for overhead materials handling systems; "Fortune" for printing type and "Fortune" for a magazine; "Normin" for an anti-depressant and "Dormin" for sedative preparation; "Thermoglaz" for plastic sheets for weatherproofing and "Thermopane" for glass sheet glazing units; "Mustang" for rubber soles for shoes and "Mustang" for rubber-saturated materials used, among other purposes, for heel pads; a composite mark predominated by the initials "V" and "M" and the word mark "Vim," both for milk and dairy products; "Monarch" for washing machines and "Monarch" for a laundry service; "Sedaquil" for an analgesic capsule and "Sedamyl" for sedative; "Devonsheer" for liquid make-up and "Devonshire" and "Flowers of Devonshire" for sundry cosmetics; "Star Wear" for hoisery, undergarments and pajamas, and "Stardust" for similar merchandise; "Dorwin-Do" for doors, windows and jalousies and "Win-Dor" for goods in part identical; "Dairy Crown" with design and "Dairy Queen," both for frozen dairy desserts; "Sport Togs" in a design including the words "by Neptune" and word "Sportogs," also in a fanciful design, for golf jackets and athletic apparel respectively; "Am-Co" for rodenticides and "Amoco" and "Amox" for auto polish and an insecticide respectively; "Western Star" for potatoes and "Western Star" for fresh fruits; "Shave-King" for electrical razors and "Shavemaster" for the same product; "Swankaps" for children's caps and "Swank" and "Swankshirts" for men's belts, suspenders, garters, and outershirts; the letters "B A C" for potatoes and the letters "A B C" and design for fresh vegetables, fruits and grapes; "Hexacon" and "Pentacon" both for cameras and photographic accessories; "Superin" for an aspirin suppository product and "Suprarenin" for a medical compound used as a vasoconstrictor and hemostatic; "Schnaps" for salted nuts and "Beer Nuts" for similar nuts, where applicant also used the slogan "So

Good With Beer" in conjunction with the word "Schnaps"; "Fortasaran" for piece goods made substantially of saran, and "Fortisan" for yarns and piece goods; "Blue Dart" for a line of children's wear and "Dart" for goods in part identical; "Maxical" for a nutritional supplement and "Maxukal" for an injectable calcium preparation; "Pro" for athletic shoes and "Pro" for athletic supporters; "Chief" with a drawing of an Indian chief for garden tractors and parts thereof and "Savage Power Chief" and other "Chief"—component marks for lawn mowers; "Cool Sip" for a liquid concentrate for making dietary soft drinks and "Kool-Aid" for powdered preparations for making soft drinks; "Scandex" for account cards, ledger sheets and similar forms and "The Scandex System" for electrical data processing equipment; "Sunbeam" for fluorescent lighting fixtures and "Sunbeam" for a wide line of electric appliances; "Dutch Boy" with an illustration of a Dutch boy for flower bulbs and "Dutch Boy" with a similar illustration for paints and paint products; "Downy Dipe" for a chemical to be used in laundering and "Downy" for soap flakes; "Wizard with Wood" for resin adhesives, glues and cements and "Wizard" for paints; "Andora" for canned sea food products and "Ancora" for canned turtle soup and meat; "Duron" with "Vinylastic" for vinyl base paints and "Vinelast" for antifouling marine paint; "Danfra" for men's wearing apparel and "Dan," "Dan River," and other "Dan"—component marks for piece goods used in the manufacture of men's apparel; "Thanalith" and "Tanalith" for wood preservatives; "Chami Sponge" for artificial sponges and the notation "chamois sponge" as used on a sponge made of chamois skin; "Duratron" for a dust or colorant hardener for concrete floors and "Dutron" for paints; "Hy-Croft" for poultry hatching eggs and baby chicks and "Hy-Cross" as used by a seller of baby chicks; "Tricho-San" for therapeutic vaginal jelly and "Trichotine" for a vaginal irrigation powder; "Diathen" in script for diuretics and "Diafen" for antihistamines; "Tip-Toe-Matic" for clothes ironers and "Lee Tip-Toe-Matic" for folding chairs; "Phenistan" for a preparation used for relief of colds and "Phenergan" for an antihistamine product used for both human beings and animals; "Danny Boy" for fresh tomatoes and "Andy Boy" for fresh vegetables; "Donn Fresh" for fresh produce brokerage and distributing services and "Dawn Fresh for related goods; "Admiral" for outboard motor boats and "Admiral" for radio receivers and electric appliances of many kinds; "Crete-Prep" for cement or concrete paving cleaner composition and "Metalprep" and various "Prep" combinations for a composition for removing and inhibiting rust, removing oils and greases, and similar purposes; "Cloverdell" for pork roll and "Clover Farm" for an assortment of meat products; "Cadillac" for winches and hoists and "Cadillac" for automobiles, parts thereof, supplies, accessories and

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equipment; "Ajax" for starch and the same word for soap and a household cleaner; "Rite-Fit Stroller" for dresses and "Stroller" and "Shelton Stroller" also for dresses and other women's apparel; "S-K-O" for a medicinal preparation and "S-K-F" and "SKF" for a line of pharmaceuticals; "Angela Q" for tricot fabrics and "Angelica" for men's and women's washable service apparel; "Cortina" for canned tomatoes and "Corina" for tomato paste and related goods; "Klipper King" with a notation for fingernail clippers, etc. and "Pocket King" and "Kustom King" for related goods; "The Slenderella Doll" for dolls and "Slenderella" for dolls; "Arabesque" for a decorative finish for glass, metal, plastics and the like and the same mark for furniture and furnishings accessories; "Asmakets" for medicinal tablets for the relief of asthma and hay fever and "Asmatab" for similar medicines; "Mascot" and "Sina Mascot" for dolls and toy animals, birds and fish, and "Mascot Toy Company" used in the marketing of such goods; "Internatio" for ammonium sulphate used as fertilizer and "International" for fertilizers; "Allumatic" for tanks for water heaters and "Alumatic" for combination storm and screen windows; "Stimulawn" for organic compost and "Stim-U-Plant" for plant food; "Star" in a composite mark for insecticides and "Star Rose Dust" with a design for the same product; "E-Z Glo" for charcoal briquettes and "EZ-Fire" and "E-Z Lite" for kindling blocks and charcoal; "Executive Line" for cigarette lighters, ashtrays and similar goods and "Executive" for lighters and smoking tobacco; "Supreme" in a composite mark for vodka and "Bourbon Supreme" for whisky; "Little Gem" for knives and "Gem" for safety razors and blades; "Peter Pan" for aprons, rain bonnets and gloves, and the same mark for cotton and rayon piece goods used in the manufacture of women's apparel including aprons; "RN-Creme" for hand cream and "Aren" for clinical products including medicated body lotion; "PV" for television receiving sets and parts thereof and "CV" for similar products; "Plasti-Bond" for a bonding cement and "Plaster-Weld" for related goods; "Paul Perregaux" for watches, clocks and parts thereof and "Girard Perregaux" for the same products; "Reflecto-Bar-Rier" for a plastic film used as insulating material and "Reflectal" for related goods; "Reflecto-Batt" for rock wool insulating bats and "Reflectal" for similar goods; "Talk-A-Lot" for electric phonographs, inter-office communication equipment and amplifiers and "Talk-A-Phone" for goods in part identical; and "King-Kup" for candy and "King's" also for candy.

RECENT PATENTS

2,907,788—G. D. Searle — Dodecahydrophenanthrene Carboxylates.

2,908,611-2—Olin Mathieson—Amphotericins A and B.

2,908,613—National Drug—Reserpine-Acetamide Hypotensive Compositions. •

(*Continued from page 256*)

about three hours of additional time a month for each of the two checkers at the two plants.

The categories for quality are:

(1) Acceptable.

(2) Conditionally acceptable—additional quality control inspection required by Lehn & Fink.

(3) Totally rejected—the order cannot be replaced in time.

(4) Accepted because of urgent need, but requiring Lehn & Fink to inspect and discard during production.

Each month individual "case histories" of each order are compiled for Lehn & Fink's own reference, and graphs of suppliers' performances during the month are compared with Lehn & Fink's own delivery record.

Every six months, the "case histories" are compiled and the performance of each supplier is graded. Only suppliers that provide ten or more orders in six months are included in the vendor rating. Final performance is divided by the total number of orders, to provide comparison among suppliers.

The points regarding time are assigned in this way: on time, zero; one week late, minus one; two weeks late, minus two; three weeks late, minus three; more than three weeks late, minus ten.

Plus points are given if a supplier delivers an order in advance, and these are also graduated. If, for instance, goods are delivered in four weeks and the usual lead time is six weeks, the supplier receives a plus ten. Plus points are also given for good cooperation with company designers, for overtime, and for rush jobs.

For quality, points are assigned this way; acceptable, zero; conditionally acceptable, minus one or minus two, depending on the amount of inspection needed; rejected, minus five; acceptable only because of urgent need, minus five.

These points are assigned to each single order. When, at the end of the six-month interval, all orders from a given supplier are combined in one report, the evaluation of a supplier might look like this:

No. of orders	Points penalized			%	Letter
	Late	Quality	Total		
46	8	0	8	83	B

The percentage figure represents the orders unaffected by penalty points. The letter grade is entered on a scale comparing all suppliers in a given category.

Only suppliers in one category are graded comparatively, because of the large variance in performance among different categories, with the result that grading one category against another might totally eliminate a group of prime suppliers. However, discovering this variance has shown the company that insufficient lead time may have been designated by some types of suppliers and either they, or the com-

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IN CHICAGO A. C. DRURY & CO., INC., 219 E. NORTH WATER ST.

pany placing the order, must adjust scheduling.

Once letter grades are assigned, this is how they are interpreted:

A—a supplier who has done an exemplary job and who should be encouraged and given greater volume of business.

B—a potential A supplier who has slipped. For many B suppliers, the company found there has been a run of bad luck—a plant was moved or a labor problem has affected quality and delivery time. He is encouraged to improve his service.

C—an undesirable supplier whose shipments are consistently late and of questionable quality. Giving such a supplier additional business is discouraged, and efforts are made to find a better source.

D—a supplier who has proved totally unsatisfactory, to be eliminated as a future supplier.

At the end of a six-month period, after these evaluations have been compiled, letters are sent to the executives of each of the companies advising them of their ratings.

Response to these reports has been extremely impressive, and has contributed greatly to increased mutual understanding and better business dealings. There has been no resentment on the part of any of the companies rated, but rather, a sincere interest in the system, and in their own rating.

Typical answers from suppliers who were rated A follow:

"It is rewarding to us to know that you take our merchandise and service seriously enough to determine its comparative standing with other suppliers, and more particularly that you are thoughtful enough to express your appreciation of our efforts."

"We find it very gratifying to know that our efforts to guarantee top quality and top services to our customers do not go unnoticed and you may be sure that we will bend every effort to keep the results up to your highest rating."

"Please be assured that we will spare no effort to maintain the high standard you have set for us, and it will be our great pleasure to enter more intimately into the planning and suggesting of useful materials."

Responses from suppliers who have been rated B or C have, of course, shown concern. Most often they have agreed that quality and delivery were not up to par and have indicated in detail the reasons for this.

The company's increased understanding of its vendor's problems has been one of the most valuable things to come out of the rating system, coupled, of course, with increased efficiency in scheduling for Lehn & Fink.

The system has also enabled Lehn & Fink to reward good service by increasing the quantity and scope of its dealings with highly rated vendors, through both its package engineering department and its purchasing department. •

(Continued from page 164)

in Philadelphia via closed-circuit TV. The first programs premiered in March of last year were a series of six lectures on forensic medicine. These 45-minute illustrated talks were sent to over 600 students in the five local medical schools on an important medical subject. Along with the 600 students, 400 physician guests were invited to watch the programs.

One of the latest projects has been a trans-Atlantic audio conference which enabled outstanding British and American doctors to diagnose two problem cases in gastroenterology. The British Medical Association and The Philadelphia Medical County Society were linked by transatlantic telephone cable for an hour during a recent meeting of both medical organizations. The diagnosis depended solely on written clinical and pathological histories received by the two medical panels prior to the meeting. Members of the panels were identified to the audience across the ocean by means of a large photograph hung behind their medical counterparts. As each member spoke, a light flashed under his photograph on the other side of the Atlantic.

This is the fifth such trans-oceanic conference SK&F has arranged in order to foster international understanding and further postgraduate medical education. There were no commercials for the Philadelphia concern.

Another current project sponsored by SK&F is in the field of medical art. A traveling exhibition for museums, medical societies, and the like, assembled by the company, presents prints of medical interest (which have been given to the Philadelphia Museum of Art) to physicians and the public.

Writing in a handsome catalog called *Ars Medica*, Carl Zigrosser of the Philadelphia Museum said of the exhibit, "*Ars Medica* aims to portray, in a nutshell, the essential aspects of medical iconography . . . The exhibition represents, one might say, a happy conjunction of fine art with the Healing Arts."

This operation is just one from SK&F's PR department. Another, equally as spectacular and award-winning, is their "March of Medicine," a network documentary TV program started in 1952. This series is designed to serve the physician by making the public aware of the sacrifices and progress being made by the medical profession in caring for their patients. As is all SK&F TV, no commercials are ever given. In that year, SK&F produced a 30-minute series of programs on mental health, heart disease, cancer, and geriatrics. Eventually they produced a show on the effects on Hiroshima of the world's first atomic bomb.

In 1957 they did an hour-long program, "Monganga," about a medical missionary in Africa. In 1958 SK&F sponsored a 60-minute report on how U. S. physicians work throughout the world to help heal the millions in need of medical care. Called "MD International," it was repeated later in the year due to the tremendous acclaim it received from medical

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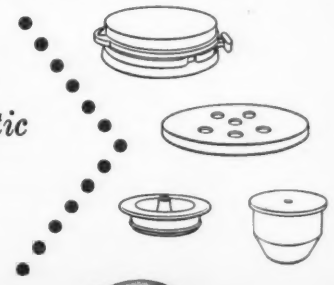

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leaders as well as from TV critics. Both "specials" have won important TV awards.

Their next "March" program will be entitled "MD-USA." Some sequences are now being shot in Alaska. This will be televised in the spring of 1960.

Does no-sell television pay off? Fred Roll has said that the answer is an unqualified yes. "Few industries compete more intensively than the pharmaceutical industry does," he continued, "to obtain the respect and attention of a few hundred thousand doctors; hence, direct mail, heavy ad schedules in medical journals, and regular calls by the detailmen. But if, behind these promotional techniques, a company's reputation can be reinforced by institutional means, then the usual methods of sales communications will have added weight.

"Yet beyond that, if the institutional service has genuine merit, than the pharmaceutical house has justified its place on the medical scene in a manner which transcends commercial interest. The service then becomes an adjunct of the profession."

While SK&F is one of the few companies in the business to have a man charged with looking for new ways to use electronics in medical communication, the TV programs are just a part of their public relations operation. The department's vistas are far wider, its responsibilities far more complicated.

SK&F PR Sections

William Grala, manager of the 52-man department (reporting to Roll), has developed a comprehensive departmental organization. As can readily be appreciated from the chart, the department is highly organized.

Explaining how his sections function, Grala recently told this reporter, "The size of our department (52 people) results from our grouping, under one authority, all the communications functions which are interested in the various publics: medical, pharmacy, scientific, stockholder, employee, lay, etc. In many other companies, these activities are dispersed through the organization and may reside in a number of departments, e.g., employee publications in the personnel department; guest relations in distribution; publicity in marketing, etc.

"During the last ten years we have gone through an evolution of our organizational structure. The current setup we feel gives us a compact, centralized operation which insures maximum coordination, effectiveness and ease of supervision."

Gathering and Disseminating Information

In the world of press relations, SK&F has organized their department so that there is a separation between inside communications (employee communications) and outside publicity (press relations) product publicity, medical and scientific news about SK&F research, etc. SK&F spends little time on product publicity as such. Routine news releases are prepared on

new products and sent to the pharmacy publications. All contact with the medical press is via SK&F's press relations department.

Employee Communications

The section on employee communications publishes a bi-weekly newspaper and a bi-monthly magazine supplement to it for all employees, as well as a monthly newspaper for the field force of detailmen. Here again you can see the centralized PR operation. The personnel department is served with the house organs, and the marketing division gets a paper for detailmen. But all are under the one department, assuring management's knowing who says what to whom and when.

The employee communications unit also serves as an "internal PR agency" to help with special problems. A good example of this is that now, when the industry is under attack on various fronts, SK&F employees are kept up-to-date on what's going on and have information available to refute many of the charges. This unit also is charged with stopping rumors; avoiding any leaks of confidential information; and keeping everybody informed on corporate developments as they might affect the employees.

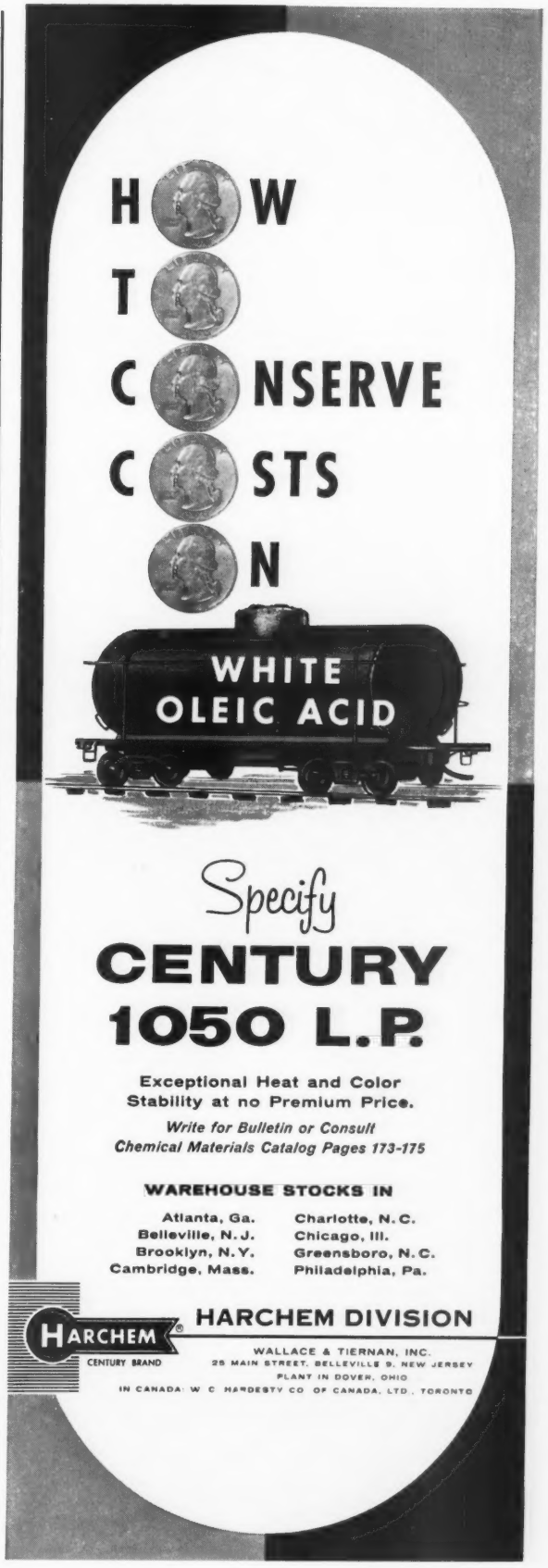
Guest Relations

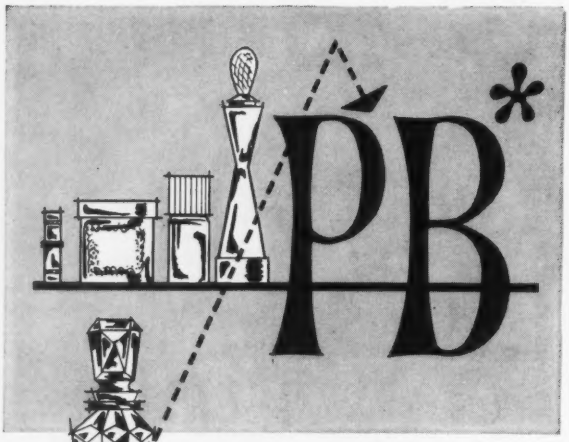
This unit is responsible for arranging plant tours for all operating departments of the company. For example, the marketing division will ask guest relations to see that visiting physicians are given the red carpet; distribution will request that a group of pharmacists be shown through the plants; personnel will make sure that new employees know what's being done at SK&F, via a plant tour; international often has foreign guests who want to tour a modern American plant. Thus, all departments rely on guest relations to do the job that they themselves would have to assign people to if there were no special department.

Speakers Bureau

SK&F PR department recently decided to organize a speakers bureau. Talking about this recently, Grala said, "We want to get the story of the accomplishments of the industry and SK&F across to thought leaders at the grass roots level. We feel that one of the best ways to do this is on a face to face basis; thus we are establishing a speakers bureau within the department using our detailmen as a supplement to handle speaking engagements at meetings of civic, social, church, and other such groups. We tried this out with a pilot group of 25 detailmen in New England and the mid-south last summer and were encouraged to expand it on a national level. To head this program, we recently added to our staff the head of the speech department of a large mid-western university. He will conduct speech training courses for detailmen, handle special speaking engagements him-

(*Continued on page 278*)





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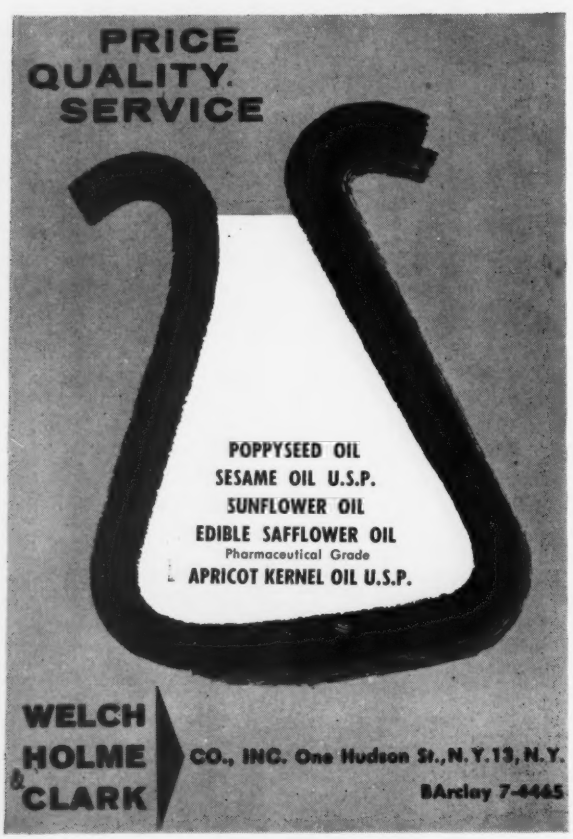

(*Continued from page 277*)

self, and administer the program. As the next expansion step, we will have 100 detailmen trained and available for speaking assignments by the end of this year."

Information Services Center

In existence for a few months, this unit does information research for all areas of public relations, maintains files of appropriate data, and issues a monthly press digest to the PR staff and company executives. The digest contains information about articles that appear in the public press about SK&F, the industry, and conditions that are considered to affect both.

Project Section

Many companies have found a steady stream of "special projects" that are not in the ordinary frame of the corporate structure, but interesting enough to follow up. The problem is that often there are no capable executives who can sift through these ideas to see if there may be a germ of something that could be put to work for the company. Then there are the projects that are infrequent but, when they do occur, demand a staff for a limited time.

In order to meet such needs, SK&F PR has just added a section charged with the responsibility of being "roving linebackers." This staff will move in and out of the projects as they come along. They will produce the "March of Medicine" shows which occur once or twice a year; conduct the one-day Open House for about 10,000 relatives and friends of employees (every other year); and other new PR projects. This section will have as its continuing responsibility the public relations aspects of institutional advertising and activities brought about by the SK&F research and development division.

SK&F Target Approach

There are no shotgun publicity attempts made by SK&F. They zero in on a specifically defined target and, make no bones about it, they usually hit the bull's-eye.

Thomas Moon

A good example of the way SK&F public relations complements the marketing division's promotion is the film "The Ordeal of Thomas Moon." It was produced by SK&F and has been shown to millions of moviegoers (in theaters) since 1958. It is a short subject beautifully photographed, showing how a fat man, Thomas Moon, suffers from being overweight. Its sole purpose was to stimulate the fat patient to see his physician. There is no mention of any drug in it. There is no mention of SK&F. But after the film is seen, any fat person in the audience must feel that he should do as Thomas Moon did, that is, do something about losing weight.

Thomas Moon is pure public relations. It is not

directly tied into a product. But since SK&F dominates the antiobesity market and since many physicians use some drugs to help keep their patients on a diet, then, quite naturally, this film will eventually help SK&F more than any pharmaceutical company. It was part of an entire campaign including such projects as exhibits, local public TV programs, and pamphlets.

Another example of informed institutional public relations was the recent SK&F production of the half-hour film "Psychiatric Nursing: The Nurse-Patient Relationship." It was nominated for an academy award last year—the second independently produced nontheatrical film ever to be nominated for such an award.

The idea behind this project is simple enough. SK&F has a tremendous market in mental hospitals for Thorazine, Compazine, and Stelazine. Mental hospitals need more and better trained psychiatric nurses. If you can help the hospitals recruit these important individuals then the hospital will be grateful to you.

This is an example of the enlightened self-interest idea, such as Roll spoke about in the August 1958 *Medical Marketing* article. The film was influential in an English hospital towards serving as a model for an entire training program. What better public relations could you want?

SK&F Foundation

Established in 1952 by SK&F Laboratories, the Smith Kline & French Foundation has, as of June 1959, given a total of $2,698,127 to science, education and charity.

The Foundation makes five major types of grants. These are: direct grants for education, donations to combat mental illness, contributions to public charities and improvements, support for purchase of scientific and educational equipment and construction, and awards in basic research in medicine and related sciences.

The Foundation, a nonprofit operation apart from any SK&F research, lists among its trustees Fred Roll; Howard Morgan, secretary-treasurer; and Furness Thompson, vice-president, the research and development division. It is not a part of the public relations department or of the company, but is located in the department for ease of administration.

Roll of SK&F

Any article on SK&F's public relations department must go into detail on its founder, who started as a one-man PR staff and built it to its more than 50 present members.

G. Frederick Roll, director of public relations for SK&F, reports to Walter Munns, president of the company. Francis Boyer, chairman of the board of SK&F, is not shown on the organizational chart, but he is very much a part of the firm's public relations

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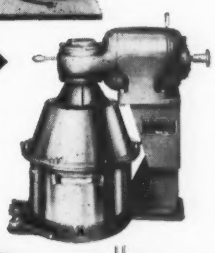

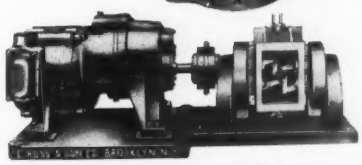

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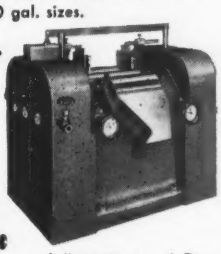

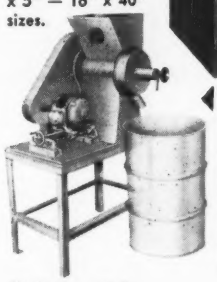

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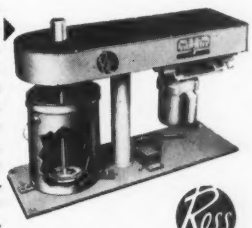

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activity. When Munns became president, he raised the department to the status it now enjoys by having it report directly to him and, so is continually interested in the department and its operations.

Roll, now chairman of the newly created Public Relations Section of the Pharmaceutical Manufacturers Association, is one of the most respected members of the pharmaceutical public relations profession. He is envied by many professionals in the field, since he has one of the largest budgets and one of the most complete departments in the business. This fact alone testifies that he has been able to win the complete confidence of his management—they know that he knows what he is doing. Roll also works with Francis Boyer on industry public relations problems, since Boyer spends considerable time on this area.

In the September issue of the medical journal *GP*, Roll wrote an article titled "Doctors, Drugs and Critics." In it he explains the industry's point of view and some of the reasons why the industry is now in the uncomfortable position of having to defend itself against critics.

He places the blame right on the doorstep of poor industry public relations. "The industry," he wrote, "has been singularly reluctant to state its own case. In general, it has never told the story of its accomplishments to the public, for one very practical reason —fear of antagonizing the individual it primarily serves—the doctor."

His reply to those who criticize the promotional efforts of the industry (he was addressing himself to the physicians who read *GP*), I believe, indicates the dominant thinking of the PR Section of the PMA.

"Drug promotion is a sign of the progress being made by the industry in serving the physician through new and improved drugs . . . The volume of promotion is a necessary ingredient in allowing free choice of therapy by the individual physician . . . Methods of promotion are a matter of taste."

The Future

No one is likely to disclose what he plans to do in the future in this aggressive business of trying to get the physician's attention. However, by studying SK&F's present operations, a few moments of crystal ball gazing lead you to think of several possibilities for SK&F PR efforts.

In the *GP* article, Roll concluded by saying ". . . the industry must now begin to find appropriate ways to report its own accomplishments, not only to the profession, which it has served for so many years, but also to the public at large."

This could herald a new series of TV programs on the industry, sponsored by SK&F or perhaps the Pharmaceutical Manufacturers Association. Certainly the success of the SK&F closed-circuit color programs to physicians insures that they will continue. But will they be expanded? Will the test of originating programs on one location (from a studio at SK&F) and sending them via closed-circuit cable to five medical schools be expanded to a network of all the medical schools, sponsored by SK&F?

What about using print to reach the public? Will the PR image of SK&F find its way into ads like those now being used by Parke Davis, Robbins, Wyeth, and occasionally Pfizer?

The fact that SK&F spends more than any other firm in the field for public relations, I feel, is part of the reason that the Philadelphia firm does so well. You can be sure that their management feels that they are getting their money's worth.

1959 PRODUCTS PARADE

(*Continued from page 161*)

never reach the drug store. The cancer chemotherapy program, which alone covers some 50,000 items annually, gives an indication of the magnitude of the number of preparations that are made by the chemist but are not found therapeutically effective by the pharmacologist.

New Original Products

These cover new chemical structures previously unknown.

From the United States. Among the outstanding American products of this type are: Actase, a fibrinolytic agent isolated by Ortho Pharmaceuticals. Although this product is not entirely satisfactory as yet and produces certain undesirable side reactions, the isolation of fibrinolysin has opened up a new field of therapy and permits dissolution of small blood clots that occur in thrombophlebitis and pulmonary embolism. Research is now being conducted on further refinements. G. D. Searle has been successful in synthesizing the first therapeutically useful aldosterone antagonist, which has been marketed under the name of Aldactone and has been given the generic name of spironolactone. The aldosterone antagonists offer for the first time an opportunity of managing edema on a more physiologic basis, as compared with the action of mercurial diuretics, carbonic anhydrase inhibitors, or chlorothiazide types of products. Unfortunately the manufacturing costs of Aldactone are still high and limit its usefulness to the public at large. Further research work is needed to establish more clearly whether the aldosterone antagonists are sufficiently active to be used alone, or whether their prime usefulness rests in enhancing the action of other diuretics. Early last year the National Institutes of Heatlh announced the synthesis of a new narcotic by N. B. Eddy and E. L. May. Smith Kline & French worked in close cooperation with these investigators and supplied materials for clinical investigation. They have recently marketed phenazocine under the name of Prinadol. It must be assumed that other manufacturers who have also been licensed by the Federal Government to manufacture this narcotic will make

it available during this year. It is an effective narcotic, but its addictive quality requires further study. With DBI, the U. S. Vitamin & Pharmaceutical Company offered a different hypoglycemic agent useful in certain forms of both juvenile and adult diabetes.

From Europe. There were several outstanding developments that originated in Europe. First, one should mention a cooperative effort between the Beacham Group in England and Bristol Laboratories in the U. S., which resulted in the synthesis of penicillin 152 or Syncillin from 6-amino penicillanic acid, the latter having been made by fermentation. The availability in unlimited quantities of 6-amino penicillanic acid has started the fourth penicillin decade, which permits the synthesis of innumerable penicillin derivatives. Some of these may offer specific therapeutic advantages over the penicillins available today. This development has released a previous impasse and may have wide repercussions in the antibiotic field.

Geigy's Tofranil has been termed a thymoleptic. This product differs chemically from the monoamine oxidase inhibitors and has found use in the treatment of a variety of depressions, especially those of endogenous origin. With the availability of several drugs for the treatment of depressions, manufacturers have issued special literature to guide the physician in the use of these preparations, first because not all forms of depressions respond to drug therapy, and second because the diagnosis of depression requires special knowledge.

From the Glaxo Laboratories in England came griseofulvin, the first systemically active fungicide for the treatment of superficial mycoses of the skin and nails. Griseofulvin has now been marketed by Ayerst under its generic name, by the Schering Corporation as Fulvicin, and by McNeil Laboratories as Grifulvin. Griseofulvin had been used as an agricultural fungicide for many years before its value in human therapy was recognized. The Dutch firm of Organon produced Durabolin, an anabolic hormone with prolonged action that may aid many patients with osteoporosis and in their recovery from serious illness. From Germany came Cytoxan, marketed by Mead Johnson, which may offer prolonged remission in certain types of cancer. The extent of applicability of this product in the chemotherapy of cancer remains to be established; it represents a forward step, and probably other agents of this nature will be introduced during the coming year.

The General Trend. Two new salts of the versatile salicylate were prepared: Calcurin (Smith-Dorsey) and Actasal (Purdue Frederick). After a long hiatus, two additional synthetic narcotics offer the physician a broader choice in products available for the relief of severe pain. One product, Prinadol, of Smith Kline & French, has already been mentioned, the other is Numorphan of Endo Laboratories. Although there

were no significant innovations in the antihistamine field, 13 new combination products and new dosage forms, as well as one new salt of a previously synthesized product, were introduced. For the treatment of amebiasis, Massengill made Glarubin available; this product is derived from botanical sources. Eaton Laboratories continued their research with the nitrofurans and presented Altafur for infectious diseases and for the chemotherapy of resistant staphylococcus. For the treatment of infections of the skin, Roche's Triburon is worthy of note. There were several improvements in broad-spectrum antibiotics. Lederle's Declomycin offers lower dosage with higher blood levels, and Chloromycetin succinate (Parke Davis) as well as Syntetrin (Bristol) are now available for parenteral use. Roche's Tigan and Searle's Mornidine are two important anti-nauseants which produce few side effects. To curb the appetite in obesity, amphetamine seems to have come back into vogue; at least four combination products with tranquilizers were offered. On the other hand, Merrell and National Drug presented a nonstimulating anorexic agent developed in Europe, and Strasenburgh offered Ionamine, a phenyltert-butylamine resin.

We have not seen the end of new ataraxics. White's Permitil and Squibb's Prolixin both have the same chemical composition, but the former is provided in low dosage for ambulatory patients and the latter in a higher dosage for the more severe types of mental disorders. Mellaril of Sandoz is a promising derivative of phenothiazine, and Sycotrol of Reed & Carnrick may find its greatest value in anxieties associated with gastrointestinal disorders. An improvement in the treatment of the more severe types of mental disorders can be expected from four monoamine oxidase inhibitors developed by Lakeside (Catron), Pfizer (Niamid), Roche (Marplan), and Warner-Chilcott (Nardil). The physician will have to make his own choice among these four effective preparations.

There seems to be a need for more effective bronchial dilators, in which category nine combination products appeared and only one new chemical entity. The latter was Caytine of Lakeside Laboratories.

Since Merck Sharp & Dohme pioneered chlorothiazide, other manufacturers have been busily trying to improve the formula. Important progress has been made with the introduction of hydrochlorothiazide by Ciba (Esidrix), Merck Sharp & Dohme (Hydro-Diuril) and Abbott (Oretic); flumethiazide (Ademol-Squibb), hydroflumethiazide (Saluron-Bristol), and more recently benzydroflumethiazide (Naturetin-Squibb). The latter is offered in tablets of 2.5 and 5 mg., indicating a considerable decrease in effective dosage of the parent compound chlorothiazide, which required a dosage of 500 mg. per tablet. The newer drugs seem to produce fewer side effects, and the danger of low potassium blood levels is lessened. Ives-Cameron discovered that a previously known but

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forgotten coronary vasodilator of the nitrite series is really a very active product, and is supplying it under the name of Isordil. The patient with hypertension can now be treated with various combinations of hydrochlorothiazide and specific hypotensives. A new ganglionic blocking agent is Ostensin of Wyeth.

The common cold with all its sequelae of cough and nasal congestion is still with us. Last year it was suggested to the physician that he prescribe 22 new combination products and 11 new dosage forms of previously known products. Many of the combinations contain antihistamines and decongestants, a formula pioneered by Smith-Dorsey with Triaminic in 1956. Sometimes an antipyretic is added for good measure. There was, however, one real innovation with Otrivin of Ciba, an effective nasal decongestant with minimum rebound effect.

Dermatologic lesions remain a prevalent problem. In this field there were 30 innovations with 12 additional new dosage forms to stop the itch and heal the skin. Oral chymotrypsin, marketed primarily by Armour and National Drug, enlarged the indications of this enzyme. The same enzyme also found use in ophthalmology as a lytic agent in cataract surgery in the form of Alpha Chymar (Armour) and Zolyse (Alcon). Several new products were offered for the treatment of glaucoma.

Gastrointestinal disorders continue to demand the attention of the physician and of the industry. There is need for fundamental improvement in therapy. Among the many new products offered last year in this area there were no real innovations, but two refinements; Pfizer's anticholinergic Daricon has a prolonged period of action, and Lloyd Brothers' fecal softener Surfak appears to be more active than the previously available dioctyl sodium sulfosuccinate. Ciba entered the corticoid field with Gammacorten (dexamethasone), and several soluble forms of other corticoids for parenteral medication were offered, as well as combinations with analgesics. An important development in muscle relaxants is Soma of Wallace Laboratories, which, although chemically related to meprobamate, does not produce a tranquilizing effect. Recent studies indicate that it combines muscle relaxation with analgesia. For parkinsonism, Knoll Pharmaceutical presented Akineton and Pitman-Moore, Phenoxene.

Shall we say that new vitamin products are still "multiple," contain additional minerals, and are offered for the young, the pregnant, the aged or for those who are just downtrodden from the pressures of everyday life. The physician will continue to have a wide variety of new products to choose from.

With an increasing interest in preventive medicine, the industry has tried to provide the physician with improved diagnostic agents for use in his office. Several new blood tests were developed by Hyland Laboratories, and the Ames Company has extended its

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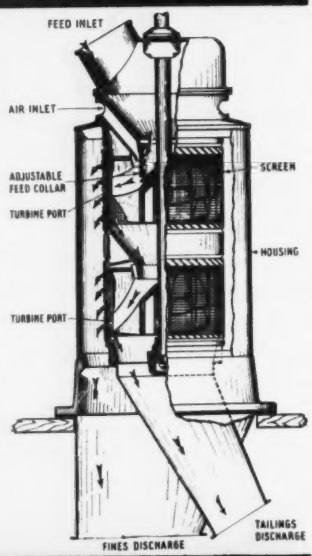

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In conclusion, one may say that significant progress has been made in new product introduction during 1959. Therapy has been advanced in a number of important areas. The purpose of this annual review —now presented for the fifth consecutive year—is to call attention to what was truly significant. If one were merely interested in numbers it would not be difficult to add a few hundred "new" preparations that have been marketed locally or in very small regions of the country. Their impact on the national sales of pharmaceutical products is of only minor importance, and their influence on the advance of therapy is nil. Last year's trend to reduce the total number of products introduced, and to devote more research and promotional effort to the marketing of new chemical entities is a secure foundation for the future growth of the industry.

HANDLING OF GLASS CONTAINERS

(Continued from page 183)

of paper is folded around the base cartons to provide a lifting medium. With this type unit, the flaps on the base cartons remain closed. This type load is well adapted to cartons with sealed top flaps, very small cartons, trays, or for customers who prefer the wrapper. However, because no extra material is used, the Flap type units are the more economical.

With the Anchor-Hocking fork method it is usually possible to tailor the size and shape of the unit load to fit both the carrier and the requirements of the customer. For truck shipments, the units are built in either full- or half-trailer widths.

If a counterbalanced fork lift truck is already available, only the special forks are required for use of the Anchor-Hocking method. These forks can be built by a lift truck manufacturer or by plant machine shops, for a cost of less than $500. This is a considerably lower cost than that of the equipment used for the other palletless methods listed above. Faster load pick-up and straighter stacking of the units are possible if the lift truck is equipped with a side shifter. Also, this fork attachment is compatible with the pallet system. Two or three forks can be used to handle a regular pallet and a five-fork attachment can be used to handle two small pallets at once.

As with other unitized loads, the Anchor-Hocking fork method has some limitations. However, experience has shown that these limitations are more than offset by such decisive advantages as the reduction in loading and unloading time realized over manual handling. This results in a reduction in trailer dock time and often the number of docks needed. Pallet investment, maintenance and freight costs of hauling pallets are eliminated, and storage and shipping space normally occupied by pallets can be used for products. Lastly, the equipment is less costly to buy and maintain than that for other palletless methods.

GLYCERINE IN COSMETIC FORMULATION

(*Continued from page 163*)

ucts to a degree that has not as yet been fully realized.

Glycerine as an Emollient

By derivation, the word emollient should be used to describe a softening agent. Current usage, however, tends to include reference to lubricating and soothing effects. In the case of skin, these various effects belong together. Dry skin is hard and inflexible, and tends to become rough and easily irritated. Therefore, an agent which helps keep the skin moist will make it more supple, smoother, and less irritable.

Old ideas of emolliency centered about oils and waxes. It was generally assumed that oils had a direct effect in softening skin, and that dry skin could be softened by applying oil, without the operation of other factors. More recent work has shown that the emolliency of oil is an indirect effect. To be soft and supple, the top layer of the skin must contain a fairly high percentage of water. A coating of oil or wax reduces the moisture loss from skin to dry air, therefore helps to conserve moisture and, indirectly, to keep the skin soft.

We do not yet know exactly where glycerine fits into the over-all picture of moisture balance in the skin. It has been used for many, many years as an emollient. Glycerine and rose water, an old standby, leaves little more on the skin than glycerine and the water which it holds there by its humectant properties. It is known that water-extractable substances naturally present in the skin are important factors in promoting takeup and retention of moisture. There have been no thorough studies to determine to what extent glycerine can augment, replace, or improve the moisture-attracting function of these natural substances. Nevertheless, many considerations add weight to the opinion that glycerine is a desirable ingredient of many cosmetic preparations on account of its emollient effect. More basic research is needed on the emolliency of glycerine.

Glycerine as a Solvent

Glycrine's solvent powers are undoubtedly more needed and more appreciated by the pharmacist than by the cosmetic chemist. A liquid as viscous as glycerine naturally exerts its solvent effect upon solid substances at a very slow rate, but the ultimate solubility of many materials is surprisingly high. In general, it is a better solvent for polar compounds than for nonpolar, but it is a good solvent for many substances which are almost insoluble in water. Calcium sulfate, calcium hydroxide, and guaiacol are all roughly ten times as soluble in glycerine as in water. Some substances form supersaturated solutions in glycerine holding much more of the solute than could be put into solution at room temperature.

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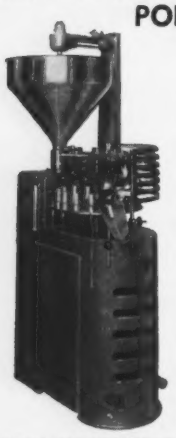

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Glycerine as Binder or Adhesive

The adhesive properties of glycerine are exploited by the cosmetic chemist in two distinct ways. He uses glycerine to hold solid particles together in a cosmetic product, and he uses it to hold the solid particles on the skin after they have been applied.

For making pressed powder or cake makeup, the primary binder is often a gum or an emulsified wax. Glycerine is frequently included as an auxiliary binder, as well as for its smoothing and spreading effect.

Simple suspensions of most solid materials in water, if applied to the skin, would leave a film of solid which would flake off soon after the water had evaporated, due to lack of adhesiveness. In many cases, addition of glycerine will cause the solid to adhere satisfactorily. In liquid products containing solids suspended in emulsions, such as liquid makup, glycerine performs a similar function.

Glycerine as Oil and Solvent Barrier

The oil-repellent properties of glycerine would be utilized principally in special-purpose cosmetics such as barrier creams. Here, in connection with oil-insoluble film formers, glycerine can be used to provide effective resistance to the passage of oils and polar solvents.

Glycerine as Foam Stabilizer

In shampoos and in shaving creams, glycerine exerts a desirable stabilizing effect upon the small bubbles constituting the foam or lather. Not in itself a foaming agent, glycerine can greatly lengthen the life of a bubble, as can be easily demonstrated by adding it to a soap solution for blowing bubbles.

The stabilizing effect is probably connected with the humectant properties and the viscosity of glycerine, as well as with its surface tension. The net result is a stronger, more lasting lather than the foaming agent would produce in water alone.

Glycerine as Viscosity Increaser

The effect of glycerine upon viscosity must be considered one of its minor functions. At 20° C., about 23 per cent of glycerine must be used to double the viscosity of water. If a thickening effect alone is wanted, it can generally be produced by addition of much smaller amounts of a suitable gum.

It should be remembered also that glycerine solutions vary more in viscosity under fluctuating temperature than does water, although such differences are small until high percentages of glycerine are reached. Some gum suspensions, on the other hand, have rather flat temperature-viscosity curves.

Glycerine as Sweetener

Dentifrices are probably the only products in the cosmetic field which have customarily been sweetened. In toothpastes, glycerine has long been used for

its sweetening effect as well as for other reasons. Since glycerine has more than half the sweetening power of an equal weight of sucrose, this property is of great value in pharmaceutical preparations.

Substitutes for Glycerine

In the past glycerine has at times risen in price rather sharply, and has also been in short supply, notably in wartime. At such times there has been a vigorous search for more available and cheaper substitutes. Many of these have been advocated for replacing glycerine in one or more of its functions. None can perform all the functions of glycerine, but for a given purpose it is sometimes possible to find a substitute which will outperform glycerine.

For cosmetic formulation, materials simulating more or less closely the effects of glycerine include propylene glycol, sorbitol, and the polyethylene glycols. Many other polyols are available, but no other seems to have met with wide acceptance. Each of the three polyols mentioned has strong points favoring its use in certain formulations. None of them can replace glycerine directly, without reformulation and adjustment of other ingredients. As mentioned above, sorbitol exceeds glycerine in prevention of water loss from a very simple vanishing cream to very dry air. This is one example of a substitute functioning in a superior manner in one highly special application, but in many of its uses, and as a versatile, all-round performer, glycerine is still the material of choice.

Harmlessness of Glycerine

Another cogent reason for favoring glycerine in cosmetic formulation is its matchless position as an almost unchallengeably harmless ingredient. The word "almost" is used advisedly, for in today's atmosphere of legislative fanaticism it may be illegal to say that anything is harmless. Glycerine is eaten as a constituent of fats, by the average person, in amounts of about ten grams per day. People have eaten one hundred grams per day for several weeks without injury. It is readily oxidized in the body to glyceraldehyde and dihydroxyacetone, normal products of the oxidation of the body's principal mobile fuel, glucose.

Rats and dogs have been fed glycerine in amounts up to 30 per cent of total diet for ten weeks without slowing their growth. With such convincing proof of harmlessness under anything approaching normal circumstances, glycerine may yet perform for the cosmetic industry a service beyond the normal lines of duty. It may be the rock upon which the doctrine of absolute harmlessness, now cherished in certain circles, will founder. For even glycerine can have harmful effects, if one goes out of his way to create conditions where they are bound to occur. Intracranial hemorrhages can be produced in mice by subcutaneous or intravenous injection of undiluted glycerine.

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Such effects obviously have nothing to do with the use of glycerine in cosmetics, yet if glycerine were a synthetic color it could not be called harmless under the law as now interpreted, and it could not be certified for cosmetic use. Harm done to an experimental animal, under highly artificial conditions without bearing on proposed uses, would negate the certitude that universal everyday usage has shown the material to be perfectly safe by decades of experience.

Such a patently ridiculous situation might be a factor in eventually convincing the authorities that absolute harmlessness is a meaningless abstract idea, not to be substituted for careful determination of harmlessness under conditions of use. Let us hope that such realistic thinking may soon prevail.

Conclusion

For many years, glycerine has been a standard and reliable ingredient of numerous products. Its value can be referred to surprisingly diverse functions, several of which may cooperate in a given preparation to make its summed effect indispensable. Its complete harmlessness as commonly used combines with many other considerations to give glycerine its leading position among cosmetic materials.

FILMCOATING

(*Continued from page 264*)

Cellulose acetate phthalate	50 gm.
Polyethylene glycol 4000	150 gm.
Castor oil	2.5 gm.
Span 80	3 gm.
D. & C. Yellow No. 11	0.5 gm.
Cyclamate sodium	10 gm.
Vanillin	2 gm.
Beeswax	10 gm.
Ethyl alcohol	120 ml.
Acetone	q.s. 1 liter

A filmcoating solution may be prepared from the above formula by dissolving the cellulose acetate phthalate in a solution of the alcohol, Span, and a portion of the acetone. The polyethylene glycol 4000 and beeswax are dissolved in a portion of heated acetone and added to the above solution. Dyes may be dispersed or dissolved in another portion of the ketone and added. Flavors, aromas, sweeteners may be added and the solution brought to final volume.

The coating may be applied to a moving bed of tablets by conventional methods, pouring or spraying small portions onto the tablets in a coating pan. As the tablets rotate, the material is distributed evenly over the surface and in a few minutes the solvents will have evaporated, leaving a hard dry film. Successive applications may be made, until a film of desired thickness is achieved.

The first Abbott product incorporating a filmcoating was marketed in 1953. Since then, practically all Abbott's sugar-coated products have been con-

verted to the Filmtab. New Abbott products incorporate the filmcoat feature.

Industrial Application

Over the past 6 years, practical experience has confirmed the commercial applicability of filmcoating. Other advantages accruing as a result of this change in tablet-unit operations may be of interest. At the time of production adoption of the filmcoating, production coating facilities were approaching full capacity. Management had anticipated a capital expenditure for equipment and a more costly outlay for new physical facilities, a common experience. During the five years following conversion to filmcoating, production increased significantly. Yet, during that period, many of the coating pans were removed. The capacity increase reflects the reduction in application time. Further, coating operators were trained in a short time to coat uniformly reproducible products. As experience with the filmcoat increased, further capacity was realized. An additional factor should be considered. Since the difference in tablet volume between sugar coating and filmcoating may vary as much as 50 per cent, it is possible to increase individual coating pan loads as much as 50 per cent in actual numbers of tablets. In summary—less time, less labor, less training, less machinery, less expenditure for floor space, and increased capacity.

Some other production advantages may be of interest. Cost of materials is always of importance. Sugar, water, shellac, starch paste, and dusting powders are inexpensive commodities. The ingredients of the filmcoat are more costly by weight. However, the weight difference between a thin film and a thick sugar coat is so significant that material savings are also possible with filmcoating.

In any tablet-coating operation, it is possible that a batch will not meet final control specifications. Recovery is necessary. With sugar coatings a washing process may be instituted. It is long and tedious and, unless very well controlled, it may ruin the entire batch. Often the recovered, recoated tablets will crack because of the excessive moisture absorbed in the washing away of the old coating. A rejected batch cannot be ground and recompressed without removal of the sugar coating, because of the increased volume. With filmcoating, a rejected batch simply can be ground with the coating intact. Since the filmcoating is so thin, it will not contribute to the size of the recompressed core. The advantages in this area of recovery are self-evident.

We have already mentioned the resistance of filmcoated tablets to abrasion and shock during counting and bottle filling. Bottles and vials used as containers for tablets are priced in relation to capacity and material weight. Clarkson[1] described sugar-coated tablets as 50 per cent greater in volume, 100 per cent greater in weight. For example, 100 sugar-coated tablets might be packaged in a 1½ oz. bottle costing 2.1

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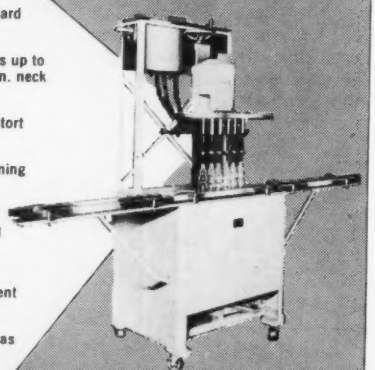

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cents and weighing 2½ oz. Filmcoated tablets of the same core size would fit in a 1 oz. bottle costing 1.7 cents, weighing 1⅞ oz. The weight of the sugar-coated tablets would be 1¼ oz. and the filmcoated tablets ⅝ oz. Total weights of tablets and bottles would be 3¾ oz. for the sugar-coated and 2½ oz. for the filmcoated. Savings are significant—0.4 cents for the bottle and cost of shipping 1¼ extra ounces for every bottle of 100. One should additionally consider the savings of smaller individual cartons as well as smaller corrugated shippers and conservation of shelf space in warehousing. These savings related to individual batches or annual production are significant.

Research Background. A pharmaceutically and therapeutically acceptable filmcoating required considerable research time and effort. Physical details of luster, uniformity of color, and environmental stability had to be achieved, with safety and medicinal availability as limiting factors. Screening of film formers and adjuvants and their reduction to practice as a filmcoat in production would not have yielded marketable products unless these constituents were nontoxic and acceptable to the Food and Drug Administration—even more impractical if the medicinal was not available from the filmcoated tablet, or if the film significantly impeded disintegration. Only after establishing experimental means of measuring and controlling these properties was it possible to evolve an acceptable filmcoat.

Product Advantages. Filmcoating expands the area of product identity. This is important to the manufacturer, physician, druggist, and patient. Monogramming is feasible without added cost. Filmcoating functions independently of tablet shape; thus a maximum of product differentiation is possible between the products of a single manufacturer as well as between competitive products. In the light of the present activity concerning dyes, differentiation by shapes and monogramming as well as by acceptable colors is important.

Another product advantage may be the stabilization of the medicinal ingredient. Previous reference has been made to the paradox of formulating moisture labile medicinals into stable tablet cores and then exposing them to moisture in the application of sugar coatings. Conversion to nonaqueous formulating is facilitated by filmcoating. An accepted means of insuring full product potency over the shelf life of a product is to include, where allowable, an excess or overage. These excesses are obviously costly. To insure that the consumer receives the full label claim of vitamins, substantial excesses have been required to provide suitable product shelf life. The adoption of filmcoating resulted in a significant prolongation of stabilities, extending expiration datings as well as materially reducing excesses. An evaluation of individual corporate formulas considering material re-

ductions of excesses as a test proposition may reveal the potential value of filmcoating.

During the past five years another change was effected in the formulation of dosage forms. This change involved the conversion from soft, elastic gelatin capsule products to filmcoated tablets. Transformulation from sugar coating to filmcoating results in reduced costs. Savings may be of greater proportion, however, if the product transition involves transformation from capsulation (soft or hard gelatin) costs to filmcoated tablet costs.

An interesting new process for the application of filmcoating is reflected in certain process and apparatus developments by Wurster.[16-19] These hold promise of additional cost reduction in the tablet-filmcoating operation.

Abbott studies employing filmcoatings indicate application time is significantly shortened in this equipment. Wurster[19] has described the technique as a new method of rapidly coating particles, including tablets. In the process, the tablets are coated and dried while suspended in an upwardly moving current of air. Solutions and suspensions of coating materials are employed. Drying is accomplished by the movement of room temperature or heated air through the coating chamber.

Promotional Advantages. The cost reductions resulting from the inclusion of lesser excesses, packaging and shipping savings, and time and material reduction for the coating process are significant to the manufacturer. But, what advantages do filmcoated tablets offer the consumer? What advantages might a pharmaceutical manufacturer mention in promoting tablets with filmcoatings?

It would be possible to call to attention the reduced or small size which makes the product easier to swallow. The coating is noncaloric. This is a possible advantage to the calorie conscious physician and patient in both obese and diabetic conditions. Discussion of product potency and stability might be tied to the anhydrous coating process and the elimination of hydrolytic decompositions.

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DRUG & COSMETIC INDUSTRY
101 West 31st St., New York 1, N. Y.

Situations Wanted

SALES MARKETING REPRESENTATIVE. Solid sales experience. Personable, ambitious young man desires position in sales, marketing or management. College grad. Box F-3, Drug & Cosmetic Industry.

Business Opportunities

LARGE AROMATIC RAW MATERIALS FIRM in Grasse (Alpes-Maritimes, France) seeks representatives, very well introduced. Write Havas Grasse No. 159 (France).

FREE: We distribute Rauwolfia serpentina seeds free to enterprising American growers. Send required airmail charges only, one to five dollars. Other Indian botanicals available. The book "Medicinal, Economic and Useful Plants of India" postpaid one dollar, enclose with order. Bally Seed Store, P. O. Bally, (Howrah), W. Bengal, India.

TWO EXPERIENCED YOUNG COSMETIC CHEMISTS with new patentable processes and products seek active or inactive investor interested in establishing manufacturing or consulting firm. Will consider working as a team on a profit-sharing basis. Metropolitan New York-New Jersey location. Box F-5, Drug & Cosmetic Industry.

FOR SALE: Subject to prior sale we offer the following two piece hard shell gelatin capsules:

Amount	Size	Color
3,698,000	#4	Transparent yellow & black
7,000,000	#5	Transparent yellow & black
4,000,000	#0	Light green opaque
5,900,000	#1	Buff Opaque
5,000,000	#0	Opaque orange & opaque yellow

Capsules are in their original shipping cartons and have been stored under ideal storage conditions. Samples available. Prefer to sell complete inventory, but will consider selling as separate item.
Reply to Box F1
DRUG & COSMETIC INDUSTRY
101 West 31st St., New York 1, N. Y.

Business Opportunities

PACKAGING PROBLEM?
Blister Packs, Vacuum Formed inserts and trays, Skin Packs, complete contract packaging facilities.
Pharmaceuticals and Cosmetics are our specialty.
Your package re-designed without charge.
CLEAR-VU PACKAGING CORP.
WOrth 6-4275
285 Lafayette St., New York 12, N. Y.

Machinery and Equipment For Sale

$3,000,000 LIQUIDATION CHEMICAL PLANT AT ORANGE, TEXAS. Type 316 Stainless Steel Tanks, Kettles, Heat Exchangers, Columns, Still, Crystallizers, Centrifugals, Pumps, Valves, etc. Wonderful Values. Send for list. Perry Equipment Corp., 1429 N. 6th St., Phila. 22, Pa.

FOR SALE:—Stokes 90-D Automatic Tube Filler & Closer, Stainless contact parts; S & S GI Auger Filler; Triangle Filler & Closer; Standard Knapp 606 Compression Units; Horizontal Spiral Mixers 200, 1000 & 2000# Cap.; S.S. Jack. Kettles 50 & 60 Gals.; Colloid Mills; Cappers, Conveyors, Labelers, etc. Ask for Bulletin A-44. The Machinery & Equipment Co., Used Div. of Haring Equipment Corp., 91-93 New Jersey R.R. Ave., Newark 5, N. J., MArket 2-3103.

FOR SALE:
3—Cherry-Burrell Superhomo Homogenizers. (2) 1200 gal. per hour. (1) 930 gal. per hour, excellent condition, only used about six weeks out of each year. 3—Flexflo pumps for above. 1—Complete spare block for superhomos. Machines may be inspected at any convenient time.
BOX 0-1, DRUG & COSMETIC INDUSTRY
101 West 31st St., New York 1, N. Y.

MODERN REBUILT MACHINERY
UNION Rebuilt Machinery Established 1912
- F. J. Stokes Model 90-D Automatic Stainless Steel Tube Filler and Closer.
- Resina Model RU-120 Straightline Capper.
- Pneumatic Scale High Speed Automatic Cartoning Line with Feeder, Bottom Sealer, Top Sealer, Wax Liner and all interconnecting conveyors.
- Package Machinery Models FA, FA2, FA3 Wrappers, with and without Electric Eyes.
- Hayssen, Scandia, Hudson Sharp Overwrap Machines—all sizes.
- Pak Rapid Model A Pill Wrapper.
- Hope 4-Piston S. S. Automatic Filler.
- W. & P. 3,000 and 3,500 gal. Jacketed Mixers.
- Baker Perkins, Day, W. & P. Heavy Duty Jacketed Mixers, 2½ to 200 gal. caps.
- Day 50 to 10,000 lb. Dry Powder Mixers.
- Colton 6 ft. diam. S.S. Revolving Pan.
- Colton 140 Single Head S. S. Tube Filler.
- Stokes & Smith DD-2 Rotary Tablet Machine.
- Mikro 1SH, 2TH, 4TH Pulverizers.
- Standard Knapp, A-B-C, Ferguson and Ceco Carton Sealers.
- Fitzpatrick Model D, S.S. Comminuter.

Tell Us All Your Machinery Requirements
Complete Details Promptly Submitted.
UNION STANDARD EQUIPMENT CO.
318-322 Lafayette St., New York 12, N. Y. CAnal 6-5333
167 N. May St., Chicago 7, Ill. SEely 3-7845